

Vo, Hai

From: Fuller, Kathleen
Sent: Friday, April 18, 2003 4:29 PM
To: Vo, Hai
Subject: 09/477775



vo477.rtf

I could not locate a registry number for 2(4'-octylphenyl)-6-nonyloxynaphthalene but all the other compounds were searched.

*Kathleen Fuller
Team Leader EIC1700
CP3/4 3D62
703/308-4290*

=> file reg
FILE 'REGISTRY' ENTERED AT 16:18:15 ON 18 APR 2003
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DICTIONARY FILE UPDATES: 17 APR 2003 HIGHEST RN 503414-07-1

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Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. See HELP
PROPERTIES for more information. See STNote 27, Searching Properties
in the CAS Registry File, for complete details:
<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

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FILE COVERS 1907 - 18 Apr 2003 VOL 138 ISS 17
FILE LAST UPDATED: 17 Apr 2003 (20030417/ED)

This file contains CAS Registry Numbers for easy and accurate
substance identification.

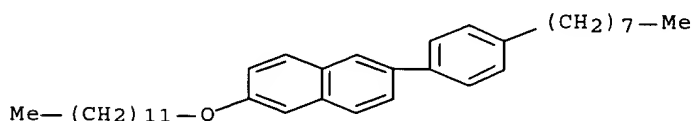
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L56 1 SEA FILE=REGISTRY ABB=ON 195375-07-6/BI
L58 41 SEA FILE=REGISTRY ABB=ON C28H36O/MF
L59 5 SEA FILE=REGISTRY ABB=ON L58 AND NAPHTHA?
L60 2 SEA FILE=REGISTRY ABB=ON L59 AND BUTOXY
L61 1 SEA FILE=REGISTRY ABB=ON L60 AND 2 (W) BUTOXY
L73 3483 SEA FILE=REGISTRY ABB=ON BUTANO? (L) BIPHENYL?
L74 1460 SEA FILE=REGISTRY ABB=ON L73 AND 2/NR
L75 32 SEA FILE=REGISTRY ABB=ON L74 AND HEXYL?
L76 17 SEA FILE=REGISTRY ABB=ON L75 AND HEXYLOXY
L77 1036 SEA FILE=REGISTRY ABB=ON C22H28O2/MF
L78 1 SEA FILE=REGISTRY ABB=ON L76 AND L77

L82 35 SEA FILE=REGISTRY ABB=ON BENZOTHAZOL? (L) HEPTYLOXY
 L83 2 SEA FILE=REGISTRY ABB=ON L82 AND DODECYL
 L84 1 SEA FILE=REGISTRY ABB=ON L83 AND THIO
 L90 7 SEA FILE=HCAPLUS ABB=ON L84
 L91 33 SEA FILE=HCAPLUS ABB=ON L56
 L92 9 SEA FILE=HCAPLUS ABB=ON L61
 L93 1 SEA FILE=HCAPLUS ABB=ON L78
 L94 38 SEA FILE=HCAPLUS ABB=ON (L91 OR L92 OR L93)
 L95 37 SEA FILE=HCAPLUS ABB=ON L94 AND LIQ? (2A) CRYST?
 L97 43 SEA FILE=HCAPLUS ABB=ON L90 OR L95

=> d 197 all 1-43 hitstr

L97 ANSWER 1 OF 43 HCAPLUS COPYRIGHT 2003 ACS
 AN 2002:915257 HCAPLUS
 TI Anomalous increase of photocurrent anisotropy in a **liquid crystalline** binary mixture
 AU Sandhya, K. L.; Nair, Geetha G.; Krishna Prasad, S.; Hiremath, Uma S.; Yelamaggad, C. V.
 CS Centre for Liquid Crystal Research, Bangalore, Jalahalli, 560 013, India
 SO Journal of Applied Physics (2002), 92(12), 6987-6989
 CODEN: JAPIAU; ISSN: 0021-8979
 PB American Institute of Physics
 DT Journal
 LA English
 CC 76-5 (Electric Phenomena)
 AB We report photocond. measurements in a binary system of naphthalene-based **liq. crystals**. Under UV (365 nm) illumination we observe an anomalous increase in the photocurrent for the mixts. For a particular concn., the photocurrent anisotropy defined as the ratio of photocurrents orthogonal to and along the director in the Crystal E phase reaches a value of 850, the highest achieved under steady-state illumination conditions from a conventional source. We argue that when using such mixts., it is possible to reach the limiting values predicted by models based on conduction dictated by charge-carrier hopping.
 ST anomalous photocurrent anisotropy **liq cryst** binary mixt; octylphenyl dodecyloxynaphthalene mixt anomalous photocurrent; pentylphenyl ethoxynaphthalene mixt anomalous photocurrent
 IT **Liquid crystals**
 Photoconductivity
 Photocurrent
 UV radiation
 (anomalous increase of photocurrent anisotropy in **liq. cryst.** binary mixt.)
 IT Mixtures
 (binary; anomalous increase of photocurrent anisotropy in **liq. cryst.** binary mixt.)
 IT **195375-07-6**, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene
 503159-21-5
 RL: PRP (Properties)
 (anomalous increase of photocurrent anisotropy in **liq. cryst.** binary mixt.)
 RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
 RE
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 (2) Anon; Handbook of Advanced Electronic and Photonic Materials and Devices 2001, V7
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- (5) Funahashi, M; Appl Phys Lett 1997, V71, P602 HCAPLUS
 (6) Funahashi, M; Appl Phys Lett 1998, V73, P3733 HCAPLUS
 (7) Funahashi, M; J Appl Phys 1996, V35, PL703 HCAPLUS
 (8) Funahashi, M; Jpn J Appl Phys, Part 2 1999, V38, PL132 HCAPLUS
 (9) Funahashi, M; Mol Cryst Liq Cryst Sci Technol, Sect A 1997, V304, P429 HCAPLUS
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 (11) Gill, W; J Appl Phys 1972, V43, P5033
 (12) Tang, C; Appl Phys Lett 1987, V52, P12
 (13) van de Craats, A; Adv Mater 1999, V11, P1469 HCAPLUS
 IT 195375-07-6, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene
 RL: PRP (Properties)
 (anomalous increase of photocurrent anisotropy in **liq.**
cryst. binary mixt.)
 RN 195375-07-6 HCAPLUS
 CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



- L97 ANSWER 2 OF 43 HCAPLUS COPYRIGHT 2003 ACS
 AN 2002:576173 HCAPLUS
 DN 137:318476
 TI A novel charge transport material fabricated using a **liquid crystalline** semiconductor and crosslinked polymer
 AU Yoshimoto, Naoki; Hanna, Jun-Ichi
 CS Imaging Science and Engineering Laboratory, Tokyo Institute of Technology, Yokohama, 226-8503, Japan
 SO Advanced Materials (Weinheim, Germany) (2002), 14(13-14), 988-991
 CODEN: ADVMEW; ISSN: 0935-9648
 PB Wiley-VCH Verlag GmbH
 DT Journal
 LA English
 CC 76-2 (Electric Phenomena)
 Section cross-reference(s): 35, 74
 AB A unique hybrid material system showing high electronic conduction was developed by photopolymn. of a **liq. cryst.** semiconductor, 2-(4'-octylphenyl)-6-dodecyloxynaphthalene (8-PNP-O12), and 1,6-hexanediol diacrylate as a crosslinked monomer. The resulting composite exhibited microscopic phase sepn., maintaining the self-organization of the **liq. cryst.** semiconductor in each mesophase. The charge transport properties in the composite depended on the concn. of the crosslinker, but the mobility was not degraded compared with that of the pure 8-PNP-O12 even for concns. over 10%. The macroscopic viscosity in the composite was increased after polymn., leading to the suppression of ionic conduction that is intrinsic in the nature of fluid materials. This system is promising for improved performance in org. electronic devices.
 ST **liq. cryst.** semiconductor crosslinked polymer
 octylphenyl dodecyloxynaphthalene hexanediol diacrylate; photopolymn hexanediol diacrylate composite charge transport property; octylphenyl dodecyloxynaphthalene **liq. crystal** photopolymn hexanediol acrylate; photocurrent composite polymer
 IT Composites
 Conducting polymers

Electron mobility
Ion mobility
Phase separation
Photocurrent

(charge transport material fabricated using **liq.**
cryst. semiconductor and crosslinked polymer)

IT Polymerization

(photopolymer.; charge transport material fabricated using **liq.**
cryst. semiconductor and crosslinked polymer)

IT **Liquid crystals**

(smectic; charge transport material fabricated using **liq.**
cryst. semiconductor and crosslinked polymer)

IT 13048-33-4, 1,6-Hexanediol diacrylate **195375-07-6**,
2-(4'-Octylphenyl)-6-dodecyloxynaphthalene

RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical,
engineering or chemical process); PROC (Process); USES (Uses)
(charge transport material fabricated using **liq.**
cryst. semiconductor and crosslinked polymer)

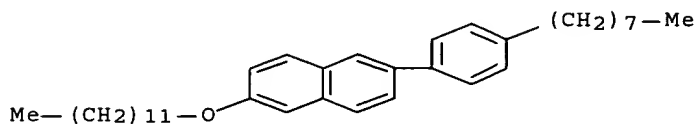
IT 57592-67-3P, 1,6-Hexanediol diacrylate polymer

RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)
(charge transport material fabricated using **liq.**
cryst. semiconductor and crosslinked polymer)

RE.CNT 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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Porous Networks 1996
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 - (29) Tanaka, H; J Phys:Condens Matter 1999, V11, PL159 HCAPLUS
- IT **195375-07-6**, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical,
engineering or chemical process); PROC (Process); USES (Uses)
(charge transport material fabricated using **liq.**
cryst. semiconductor and crosslinked polymer)

RN 195375-07-6 HCAPLUS
CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 3 OF 43 HCAPLUS COPYRIGHT 2003 ACS
AN 2002:501547 HCAPLUS
DN 137:271009
TI Carrier transport properties in crosslinked polymer/**liquid crystalline** semiconductor composite
AU Yoshimoto, Naoki; Funahashi, Masahiro; Hanna, Jun-Ichi
CS Imaging Science and Engineering Laboratory, Tokyo Institute of Technology, Yokohama, 226-8503, Japan
SO Materials Research Society Symposium Proceedings (2002), 709(Advances in Liquid Crystalline Materials and Technologies), 147-152
CODEN: MRSPDH; ISSN: 0272-9172
PB Materials Research Society
DT Journal
LA English
CC 76-1 (Electric Phenomena)
AB A novel composite system contg. of a **liq. cryst.** semiconductor and crosslinked polymer exhibited high hole mobilities in comparison with that of pure **liq. cryst.** mols. The carrier transport properties were influenced by the polymn. conditions. The mobilities are independent on temp. and elec. field in the case of mesophases polymd. samples. These carrier-transport properties are essentially different from those of well-known molecularly doped polymers.
ST carrier transport crosslinked polymer **liq cryst** semiconductor composite
IT Hole mobility
 Liquid crystals
 (carrier transport in crosslinked polymer/**liq. cryst** . semiconductor composite)
IT Composites
 Semiconductor materials
 (carrier transport properties in crosslinked polymer/**liq. cryst.** semiconductor composite)
IT Electric current carriers
 (transport; carrier transport in crosslinked polymer/**liq. cryst.** semiconductor composite)
IT **195375-07-6**
 RL: PRP (Properties)
 (8-PNP-012; carrier transport in crosslinked polymer/**liq. cryst.** semiconductor composite)
IT 461718-82-1, 1,12-Dodecanediol diacrylate-1,6-hexanediol diacrylate copolymer
 RL: PRP (Properties)
 (carrier transport in crosslinked polymer/**liq. cryst** . semiconductor composite)
RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Adam, D; Nature (London) 1994, V371, P141 HCAPLUS
(2) Bassler, H; Phys Status Solidi B 1993, V175, P15
(3) Borsenbergaer, P; Organic Photoconductors for Imaging System 1993

- (4) Crawford, G; Liquid Crystals in Complex Geometries, Formed by polymer and porous networks 1996
- (5) Funahashi, M; Appl Phys Lett 1997, V71, P602 HCAPLUS
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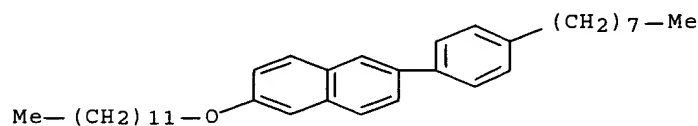
IT 195375-07-6

RL: PRP (Properties)

(8-PNP-012; carrier transport in crosslinked polymer/liq.
cryst. semiconductor composite)

RN 195375-07-6 HCAPLUS

CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 4 OF 43 HCAPLUS COPYRIGHT 2003 ACS

AN 2002:309333 HCAPLUS

DN 137:193289

TI Electronic transport in smectic **liquid crystals**

AU Shiyonovskaya, I.; Singer, K. D.; Twieg, R. J.; Sukhomlinova, L.;
Gettewert, V.

CS Department of Physics, Case Western Reserve University, Cleveland, OH,
44106, USA

SO Physical Review E: Statistical, Nonlinear, and Soft Matter Physics (2002),
65(4-1), 041715/1-041715/13
CODEN: PRESCM

PB American Physical Society

DT Journal

LA English

CC 76-1 (Electric Phenomena)

Section cross-reference(s): 75

AB Time-of-flight measurements of transient photocond. revealed bipolar
electronic transport in phenylnaphthalene and biphenyl **liq.**

crystals (LC), which exhibit several smectic mesophases. In the phenylnaphthalene LC, the hole mobility is significantly higher than the electron mobility and exhibits different temp. and phase behavior. Electron mobility in the range .apprx.10⁻⁵ cm²/V s is temp. activated and remains continuous at the phase transitions. However, hole mobility is nearly temp. independent within the smectic phases, but is very sensitive to smectic order, 10⁻³ cm²/V s in the smectic-B (Sm-B) and 10⁻⁴ cm²/V s in the smectic-A (Sm-A) mesophases. The different behavior for holes and electron transport is due to differing transport mechanisms. The electron mobility is apparently controlled by rate-limiting multiple shallow trapping by impurities, but hole mobility is not. To explain the lack of temp. dependence for hole mobility within the smectic phases the authors consider two possible polaron transport mechanisms. The 1st mechanism is based on the hopping of Holstein small polarons in the nonadiabatic limit. The polaron binding energy and transfer integral values, obtained from the model fit, turned out to be sensitive to the mol. order in smectic mesophases. A 2nd possible scenario for temp.-independent hole mobility involves the competition between two different polaron mechanisms involving so-called nearly small mol. polarons and small lattice polarons. Although the extd. transfer integrals and binding energies are reasonable

and consistent with the model assumptions, the limited temp. range of the various phases makes it difficult to distinguish between any of the models. In the biphenyl LCs both electron and hole mobilities exhibit temp. activated behavior in the range of 10-5 cm²/V s without sensitivity to the mol. order. The dominating transport mechanism is considered as multiple trapping in the impurity sites. Temp.-activated mobility was treated within the disorder formalism, and activation energy and width of d. of states were calcd.

ST electron hole mobility smectic liq crystal

IT Electron mobility

Electron traps

Hole mobility

Hole traps

Hopping conductivity

Polaron

(electronic transport in smectic liq. crystals)

IT Trapping

(shallow; electronic transport in smectic liq. crystals)

IT Liquid crystals

(smectic; electronic transport in smectic liq. crystals)

IT 195375-07-6P

RL: PRP (Properties); PUR (Purification or recovery); PREP (Preparation)
(8PNP012; electronic transport in smectic liq. crystals)

IT 63295-01-2P, 4,4'-Dipentylbiphenyl 119551-53-0P 229975-57-9P
451503-46-1P

RL: PRP (Properties); PUR (Purification or recovery); PREP (Preparation)
(electronic transport in smectic liq. crystals)

RE.CNT 51 THERE ARE 51 CITED REFERENCES AVAILABLE FOR THIS RECORD

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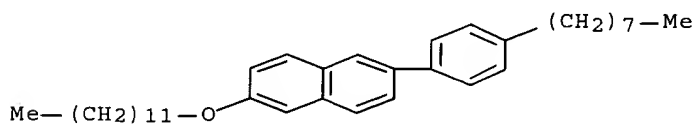
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IT 195375-07-6P

RL: PRP (Properties); PUR (Purification or recovery); PREP (Preparation)
 (8PNPO12; electronic transport in smectic liq.
 crystals)

RN 195375-07-6 HCAPLUS

CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 5 OF 43 HCAPLUS COPYRIGHT 2003 ACS

AN 2002:66774 HCAPLUS

DN 136:126314

TI Luminescence device

IN Tsuboyama, Akira; Okada, Shinjiro; Takiguchi, Takao; Moriyama, Takashi; Kamatani, Jun

PA Canon Kabushiki Kaisha, Japan

SO Eur. Pat. Appl., 16 pp.

CODEN: EPXXDW

DT Patent

LA English

IC ICM H05B033-14

ICS H01L051-20; C09K019-54

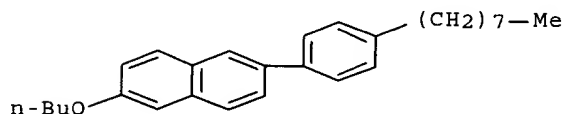
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 75, 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1175129	A1	20020123	EP 2001-117367	20010718
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				

IE, SI, LT, LV, FI, RO
 JP 2002043056 A2 20020208 JP 2000-218321 20000719
 US 2002038860 A1 20020404 US 2001-904505 20010716
 PRAI JP 2000-218321 A 20000719
 AB Electroluminescent devices are described which comprise a pair of electrodes sandwiching an active layer comprising a mixt. of a **liq . crystal** compd. with a phosphorescent compd. The **liq . crystal** compd. may have a discotic phase or a smectic phase; the phosphorescent compd. preferably has a planar mol. skeleton. The **liq. crystal** may also be phosphorescent. The **liq. crystals** aid carrier transport.
 ST electroluminescent device phosphorescent compd **liq crystal** host
 IT **Liquid crystals**
 (discotic; electroluminescent devices using phosphorescent compds. in **liq. crystal** hosts)
 IT Electroluminescent devices
Liquid crystals
 Phosphorescent substances
 (electroluminescent devices using phosphorescent compds. in **liq . crystal** hosts)
 IT **Liquid crystals**
 (smectic; electroluminescent devices using phosphorescent compds. in **liq. crystal** hosts)
 IT 2085-33-8, Tris(8-hydroxyquinolinato)aluminum 4733-39-5, 2,9-Dimethyl-4,7-diphenyl-1,10-phenanthroline 7429-90-5, Aluminum, uses 31248-39-2, Platinum octaethylporphyrin 50926-11-9, Indium tin oxide 70351-86-9 94928-86-6 123847-85-8, .alpha.-NPD **219683-04-2**
 RL: DEV (Device component use); USES (Uses)
 (electroluminescent devices using phosphorescent compds. in **liq . crystal** hosts)
 RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
 RE
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 (5) Gen Electric Co Plc; EP 0186970 A 1986 HCAPLUS
 (6) Merck Patent Gmbh; DE 19809944 A 1998 HCAPLUS
 IT **219683-04-2**
 RL: DEV (Device component use); USES (Uses)
 (electroluminescent devices using phosphorescent compds. in **liq . crystal** hosts)
 RN 219683-04-2 HCAPLUS
 CN Naphthalene, 2-butoxy-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 6 OF 43 HCAPLUS COPYRIGHT 2003 ACS
 AN 2001:886783 HCAPLUS
 DN 136:29262
 TI Organic electroluminescent display device and chemical compounds for **liquid crystals**
 IN Kido, Junji; Nakada, Hitoshi; Tohma, Teruo; Murayama, Ryuji; Yuki,

Toshinao
 PA Tohoku Pioneer Corporation, Japan
 SO U.S. Pat. Appl. Publ., 22 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 IC ICM C09K019-38
 ICS C09K019-32
 NCL 428001100
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other
 Reprographic Processes)
 Section cross-reference(s): 38, 75
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2001048982	A1	20011206	US 2001-844151	20010427
	JP 2002025779	A2	20020125	JP 2001-130527	20010427
PRAI	JP 2000-128766	A	20000428		

AB The new org. electroluminescent display device has a carrier-transporting layer and/or an org. luminous layer composed of a nematic **liq. crystal** or a **liq. crystal** dispersing a carrier-transporting low-mol. therein. When the org. luminous layer is to be bestowed with faculty as a **liq. crystal**, it is made of a nematic **liq. crystal**. Both the carrier-transporting layer and the org. luminous layer may be bestowed with faculty as a **liq. crystal**. Since the **liq. crystal** is incorporated in the carrier-transporting layer and/or the org. luminous layer, the display device can be driven as a **liq. crystal** display device in a dark place by charging with a voltage lower than a light emission initiating potential. Of course, it is driven as an electroluminescent display device when it is charged with a voltage higher than the light emission initiating potential. Use of an electroluminescent **liq. crystal** as an org. luminous layer enables omission of a carrier-transporting layer.

ST org electroluminescent display nematic **liq crystal**

IT **Liquid crystals**

(nematic; org. chem. compds. and **liq. crystals** for)

IT Electroluminescent devices

(org. chem. compds. and **liq. crystals** for)

IT **Liquid crystal** displays

(org. electroluminescent compds. and chem. compds. for)

IT 25067-59-8, Polyvinylcarbazole 38215-36-0 50851-57-5 65181-78-4
 126213-51-2, PEDOT

RL: DEV (Device component use); USES (Uses)

(org. electroluminescent display device and chem. compds. for
liq. crystals)

IT 138184-36-8

RL: TEM (Technical or engineered material use); USES (Uses)

(org. luminous substance; org. electroluminescent display device and
 chem. compds. for **liq. crystals**)

IT **195375-07-6P**

RL: DEV (Device component use); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)

(prepn. of bipolar carrier-transporting **liq crystal**
 for org. electroluminescent display device)

IT 15231-91-1, 6-Bromo-2-naphthol 51554-93-9 61676-62-8

RL: RCT (Reactant); RACT (Reactant or reagent)

(prepn. of bipolar carrier-transporting **liq crystal**
 for org. electroluminescent display device)

IT 212079-31-7P 378223-65-5P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (prepn. of bipolar carrier-transporting **liq crystal**
 for org. electroluminescent display device)

IT 378223-58-6P 378223-59-7P 378223-64-4P
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)
 (prepn. of carrier-transporting **liq crystal** for
 org. electroluminescent display device)

IT 86-74-8, 9H-Carbazole 531-91-9 540-38-5, p-Iodophenol 629-27-6
 4292-19-7, 1-Iodo dodecane 29558-77-8
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (prepn. of carrier-transporting **liq crystal** for
 org. electroluminescent display device)

IT 58743-82-1P 116223-57-5P 138567-33-6P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (prepn. of carrier-transporting **liq crystal** for
 org. electroluminescent display device)

IT 18908-66-2, 3-Bromomethyl heptane 19692-45-6
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (prepn. of org. electroluminescent compd. for **liq.**
crystal display device)

IT 150-76-5P 146370-51-6P 146370-52-7P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (prepn. of org. electroluminescent compd. for **liq.**
crystal display device)

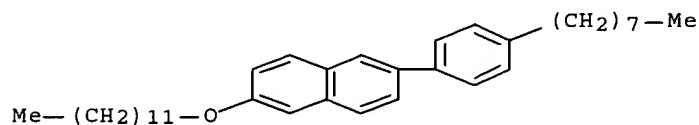
IT 378223-62-2P 378223-63-3P
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)
 (prepn. of org. electroluminescent **liq. crystals**
 for display device)

IT 90-33-5 143-15-7, 1-Bromo dodecane 623-00-7, 4-Bromo benzonitrile
 2439-55-6, N-Methyl octadecylamine 6068-72-0, 4-Cyanobenzoyl chloride
 26628-22-8, Sodium azide
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (prepn. of org. electroluminescent **liq. crystals**
 for display device)

IT 85389-89-5P 274677-41-7P 378223-60-0P 378223-61-1P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (prepn. of org. electroluminescent **liq. crystals**
 for display device)

IT **195375-07-6P**
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)
 (prepn. of bipolar carrier-transporting **liq crystal**
 for org. electroluminescent display device)

RN 195375-07-6 HCAPLUS
 CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



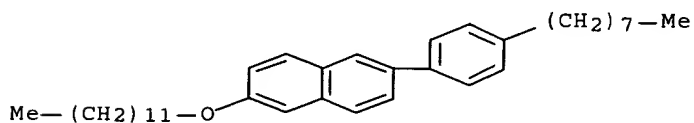
L97 ANSWER 7 OF 43 HCAPLUS COPYRIGHT 2003 ACS
 AN 2001:815411 HCAPLUS
 DN 136:77945
 TI Electrical properties of domain boundary in photoconductive smectic mesophases and their crystal phases
 AU Maeda, Hiroki; Funahashi, Masahiro; Hanna, Jun-Ichi
 CS Central Research Institute, Dai Nippon Printing Co. Ltd., Kashiwa, 277-0871, Japan
 SO Molecular Crystals and Liquid Crystals Science and Technology, Section A: Molecular Crystals and Liquid Crystals (2001), 366, 369-376
 CODEN: MCLCE9; ISSN: 1058-725X
 PB Gordon & Breach Science Publishers
 DT Journal
 LA English
 CC 76-5 (Electric Phenomena)
 Section cross-reference(s): 75
 AB We have investigated the charge transport properties in smectic photoconductive **liq. crystal** of 2-phenylnaphthalene derivs. in focus on the elec. nature of the boundaries at the phase transition from **liq. cryst.** phase into the crystal phase. With systematic studies of charge transport and collection by transient photocurrent measurements and mol. alignment by X-ray diffraction at the phase transition, it was revealed that the defective nature of the cryst. boundaries takes the shape of shallow traps at the initial stage and of deep traps successively, and finally the polydomain allowance for the carrier transport in mesophases disappears completely when the phase transition takes place into the cryst. phases.
 ST phenylnaphthalene deriv smectic mesophase photocurrent carrier mobility domain boundary
 IT Deep traps
 Mesophase
 Molecular orientation
 Phase transition
 Photocurrent
 Shallow traps
 (elec. properties of domain boundary in photoconductive smectic mesophases and their crystal phases)
 IT Electric current carriers
 (mobility; elec. properties of domain boundary in photoconductive smectic mesophases and their crystal phases)
 IT **Liquid crystals**
 (smectic; elec. properties of domain boundary in photoconductive smectic mesophases and their crystal phases)
 IT **195375-07-6 219683-04-2**
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
 (elec. properties of domain boundary in photoconductive smectic mesophases and their crystal phases)
 RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
 RE
 (1) Adam, D; Phys Rev Lett 1993, V70, P457 HCAPLUS
 (2) Funahashi, M; Appl Phys Lett 1997, V71(5), P602 HCAPLUS
 (3) Funahashi, M; Jpn J Appl Phys 1996, V35, PL703 HCAPLUS
 (4) Funahashi, M; Mol Cryst Liq Cryst 1997, V304, P429 HCAPLUS
 (5) Funahashi, M; Phys Rev Lett 1997, V78, P2184 HCAPLUS
 (6) Gibbons, D; J Phys Chem Solids 1998, V29, P115
 (7) Maeda, H; Mol Cryst Liq Cryst, in press
 IT **195375-07-6 219683-04-2**
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP

(Physical process); PROC (Process)

(elec. properties of domain boundary in photoconductive smectic mesophases and their crystal phases)

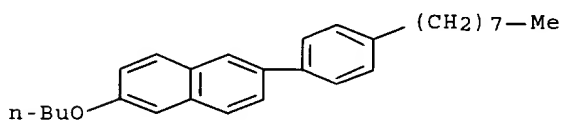
RN 195375-07-6 HCAPLUS

CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



RN 219683-04-2 HCAPLUS

CN Naphthalene, 2-butoxy-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 8 OF 43 HCAPLUS COPYRIGHT 2003 ACS

AN 2001:416626 HCAPLUS

DN 135:26655

TI Organic electroluminescent devices contg. **liquid crystal** components

IN Tsuboyama, Akira; Okada, Shinjiro; Moriyama, Takashi

PA Canon Inc., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H05B033-14

ICS H05B033-22; G09F009-30; G09F009-35

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 75

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	-----	-----	-----
PI	JP 2001155864	A2	20010608	JP 1999-337273	19991129
PRAI	JP 1999-337273		19991129		
AB	The devices comprise: (1) a glass substrate; (2) an ITO electrode; and (3) a liq. crystal hole transport, (4) an Alq3 phosphor and (5) an AlLi/Al electrode layer, where (3) shows a discotic, a plastic crystal or a smectic phase.				
ST	liq crystal hole transport org electroluminescence				
IT	Liquid crystals (discotic; org. electroluminescent devices contg. liq. crystal components)				
IT	Electric current carriers (mobility; org. electroluminescent devices contg. liq. crystal components)				
IT	Electrodes Electroluminescent devices Glass substrates				

Hole (electron)

Liquid crystals

Membranes, nonbiological

Phosphors

Plastic crystals

(org. electroluminescent devices contg. **liq. crystal** components)

IT **Liquid crystals**

(smectic; org. electroluminescent devices contg. **liq. crystal** components)

IT 2085-33-8, Tris(8-quinolinolato)aluminum 7429-90-5, Aluminum, uses
12798-95-7 50926-11-9, ITO 69079-52-3 70351-85-8 70351-86-9
90430-82-3 123847-85-8, .alpha.-NPD **180287-01-8**
195375-07-6 332104-82-2

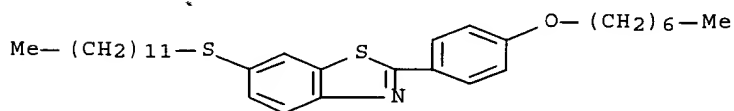
RL: DEV (Device component use); USES (Uses)
(org. electroluminescent devices contg. **liq. crystal** components)

IT **180287-01-8 195375-07-6**

RL: DEV (Device component use); USES (Uses)
(org. electroluminescent devices contg. **liq. crystal** components)

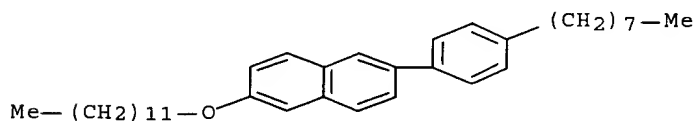
RN 180287-01-8 HCAPLUS

CN Benzothiazole, 6-(dodecylthio)-2-[4-(heptyloxy)phenyl]- (9CI) (CA INDEX NAME)



RN 195375-07-6 HCAPLUS

CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 9 OF 43 HCAPLUS COPYRIGHT 2003 ACS

AN 2001:185143 HCAPLUS

DN 134:245547

TI Conductive organic compound having a pi-electron resonance structure

IN Okada, Shinjiro; Nishida, Naoya; Tsuboyama, Akira; Moriyama, Takashi

PA Canon Kabushiki Kaisha, Japan

SO Eur. Pat. Appl., 21 pp.

CODEN: EPXXDW

DT Patent

LA English

IC ICM H01L051-20

CC 75-11 (Crystallography and Liquid Crystals)

Section cross-reference(s): 76

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI EP 1083613 A2 20010314 EP 2000-307698 20000907
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO
 JP 2001167888 A2 20010622 JP 2000-270884 20000907
 PRAI JP 1999-255007 A 19990909
 JP 1999-273878 A 19990928
 AB A conductive org. compd. device structure suitable for constituting an
 electronic device, such as an org. EL device, is formed by including a
 pair of oppositely spaced electrodes, and a carrier transporting layer
 disposed between the electrodes and in contact with 1 of the electrodes;
 in which the carrier transporting layer comprises a conductive org. compd.
 having a .pi.-electron resonance structure in its mol. In the device, the
 .pi.-electron resonance structure plane of the conductive org. compd. in
 the carrier transporting layer is aligned substantially parallel to
 surfaces of the electrodes. The conductive org. compd. is preferably a
 conductive **liq. crystal**, such as a discotic
liq. crystal or a smectic **liq. crystal**
 , and a layer thereof is included in the device, preferably by vacuum
 deposition.
 ST conductive **liq crystal** org electroluminescence device
 IT Microelectronic devices
 (conductive org. compd. having a pi-electron resonance structure in
 org. electroluminescence devices)
 IT **Liquid crystals**
 (discotic; conductive org. compd. having a pi-electron resonance
 structure in org. electroluminescence devices)
 IT Alkali metals, processes
 Alkaline earth metals
 RL: DEV (Device component use); PEP (Physical, engineering or chemical
 process); PROC (Process); USES (Uses)
 (electrode materials; conductive org. compd. having a pi-electron
 resonance structure in org. electroluminescence devices)
 IT Sensors
 (org., photo-; conductive org. compd. having a pi-electron resonance
 structure in org. electroluminescence devices)
 IT Electroluminescent devices
 Photoconductors
 Semiconductor devices
 Thin film transistors
 (org.; conductive org. compd. having a pi-electron resonance structure
 in org. electroluminescence devices)
 IT **Liquid crystals**
 (smectic; conductive org. compd. having a pi-electron resonance
 structure in org. electroluminescence devices)
 IT Vapor deposition process
 (vacuum; conductive org. compd. having a pi-electron resonance
 structure in org. electroluminescence devices)
 IT 69079-52-3, Triphenylene, 2,3,6,7,10,11-hexakis(pentyloxy)- 70351-86-9,
 Triphenylene, 2,3,6,7,10,11-hexakis(hexyloxy)-
 RL: DEV (Device component use); PEP (Physical, engineering or chemical
 process); PROC (Process); USES (Uses)
 (conductive org. compd. having a pi-electron resonance structure in
 org. electroluminescence devices)
 IT 70351-85-8 90430-82-3 193627-31-5, Cyclohexanecarboxylic
 acid-3,6,7,10,11-pentakispentyloxytriphenylen-2-ylester
 RL: DEV (Device component use); PEP (Physical, engineering or chemical
 process); PROC (Process); USES (Uses)
 (discotic **liq. crystal**; conductive org. compd.
 having a pi-electron resonance structure in org. electroluminescence
 devices)

IT 1312-43-2, Indium oxide 1314-13-2, Zinc oxide, processes 1332-29-2, Tin oxide 1335-23-5, Copper iodide 7429-90-5, Aluminum, processes 7439-93-2, Lithium, processes 7439-95-4, Magnesium, processes 7440-06-4, Platinum, processes 7440-09-7, Potassium, processes 7440-23-5, Sodium, processes 7440-57-5, Gold, processes 11099-19-7 11135-81-2 12185-56-7, Cadmium tin oxide (Cd₂SnO₄) 12798-95-7, Aluminum alloy, Al,Li 37254-60-7, Aluminum alloy, Al,Cu,Si 37271-44-6, Silver alloy, Ag,Mg 157682-41-2, Indium alloy, In,Mg
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (electrode materials; conductive org. compd. having a pi-electron resonance structure in org. electroluminescence devices)

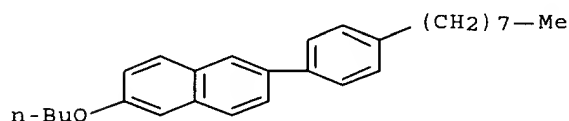
IT 50926-11-9, ITO
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (hole-injecting anode; conductive org. compd. having a pi-electron resonance structure in org. electroluminescence devices)

IT 91-64-5, Coumarin 198-55-0, Perylene 846-63-9, .alpha.-NPO 1047-16-1, Quinacridone 2085-33-8, Alq₃ 51325-91-8, DCM 123847-85-8, .alpha.-NPD
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (luminescent org. layer; conductive org. compd. having a pi-electron resonance structure in org. electroluminescence devices)

IT 188754-25-8 **219683-04-2**, Naphthalene, 2-butoxy-6-(4-octylphenyl)-
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (smectic **liq. crystal**; conductive org. compd. having a pi-electron resonance structure in org. electroluminescence devices)

IT **219683-04-2**, Naphthalene, 2-butoxy-6-(4-octylphenyl)-
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (smectic **liq. crystal**; conductive org. compd. having a pi-electron resonance structure in org. electroluminescence devices)

RN 219683-04-2 HCAPLUS
 CN Naphthalene, 2-butoxy-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)

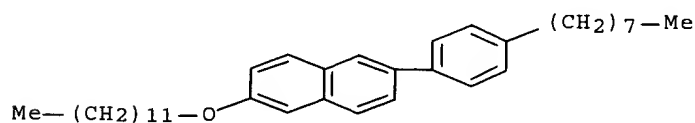


L97 ANSWER 10 OF 43 HCAPLUS COPYRIGHT 2003 ACS
 AN 2001:98673 HCAPLUS
 DN 134:139187
 TI Electrophotographic photoconductor and imaging method
 IN Maeda, Hiroki; Funabashi, Masahiro; Hanna, Junichi
 PA Dainippon Printing Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM G03G005-04
 ICS G02F001-13; G02F001-141
 CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other

Reprographic Processes)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001033990	A2	20010209	JP 1999-205076	19990719
PRAI	JP 1999-205076		19990719		
AB	The invention relates to the electrophotog. photoconductor which comprises an electrode-bearing substrate, a photoconductive layer made up of dye-sensitized liq. crystal org. semiconductor materials together with spacers, and a dielec. layer.				
ST	electrophotog photoconductor development dye sensitized liq crystal org semiconductor				
IT	Electrophotographic development Electrophotographic photoconductors (photoreceptors) (electrophotog. photoconductor contg. liq. crystal org. semiconductor material and imaging method)				
IT	Polyesters, uses RL: DEV (Device component use); USES (Uses) (in dielec. layer of electrophotog. photoconductor contg. smectic liq. crystal org. semiconductor material)				
IT	Liquid crystals (smectic; electrophotog. photoconductor contg. liq. crystal org. semiconductor material and imaging method)				
IT	115383-22-7, Fullerene (C70) RL: MOA (Modifier or additive use); USES (Uses) (for sensitizing liq. crystal org. semiconductor material)				
IT	25038-59-9, Polyethylene terephthalate, uses RL: DEV (Device component use); USES (Uses) (in dielec. layer of electrophotog. photoconductor contg. smectic liq. crystal org. semiconductor material)				
IT	195375-07-6 , 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene RL: DEV (Device component use); USES (Uses) (in photoconductive layer of electrophotog. photoconductor contg. smectic liq. crystal org. semiconductor material)				
IT	195375-07-6 , 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene RL: DEV (Device component use); USES (Uses) (in photoconductive layer of electrophotog. photoconductor contg. smectic liq. crystal org. semiconductor material)				
RN	195375-07-6 HCAPLUS				
CN	Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)				



L97 ANSWER 11 OF 43 HCAPLUS COPYRIGHT 2003 ACS
 AN 2000:819777 HCAPLUS
 DN 134:79447
 TI New aspects of organic electric materials in calamitic **liquid crystalline** photoconductors
 AU Maeda, Hiroki; Funahashi, Masahiro; Hanna, Jun-Ichi
 CS Central Research Institute, Dai Nippon Printing Co., Ltd, Kashiwa, 277-0871, Japan
 SO Materials Research Society Symposium Proceedings (2000), 598(Electrical, Optical, and Magnetic Properties of Organic Solid-State Materials V),

BB3.61/1-BB3.61/6

CODEN: MRSPDH; ISSN: 0272-9172

PB Materials Research Society

DT Journal

LA English

CC 76-5 (Electric Phenomena)

AB Calamitic **liq. cryst.** photoconductors such as 2-(4'-octylphenyl)-6-butyloxynaphthalene (8-PNP-04) and 2-(4'-octylphenyl)-6-dodecyloxynaphthalene (8-PNP-012) exhibit fast ambipolar carrier transport in all the smectic mesophases up to 1.0 .times. 10⁻² cm²/Vs. The structural defects of **liq. crystals**, i.e. domain boundaries and disclinations in domains, are elec. inactive and cause neither shallow nor deep defect states due to their fluid nature. It is illustrated that the carrier transport does not suffer from these structural defects in polydomain, by examg. transient photo-currents in very thick **liq. cryst.** layers over 100.mu.m. With an insight that this allowance of the polydomain structure and the fluidity of **liq. cryst.** photoconductors provides the authors new aspects in terms of elec. property and application, e.g. multi-gap processing, the position detect sensor is demonstrated in a wedge cell filled of 8-PNP-012, referring the position sensitive transit time of photo-induced transient current. The present result indicates that the photoconductive **liq. cryst.** material is available for multi-gap structured devices.

ST calamitic **liq crystal** photoconductor org elec material

IT **Liquid crystals**

Photoconductivity

Photoconductors

(new aspects of org. elec. materials in calamitic **liq. cryst.** photoconductors)

IT Electric conductors

(org.; new aspects of org. elec. materials in calamitic **liq. cryst.** photoconductors)

IT Electric current carriers

(transport; new aspects of org. elec. materials in calamitic **liq. cryst.** photoconductors)

IT 195375-07-6, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene

219683-04-2, 2-(4'-Octylphenyl)-6-butyloxynaphthalene

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(new aspects of org. elec. materials in calamitic **liq. cryst.** photoconductors)

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Borsenberger, P; Jpn J Appl Phys 1995, V34, PL1597 HCAPLUS

(2) Borsenberger, P; Organic Photoreceptors for Xerography 1998

(3) Funahashi, M; Appl Phys Lett 1997, V71(5), P602 HCAPLUS

(4) Funahashi, M; Appl Phys Lett 1998, V73, P3733 HCAPLUS

(5) Funahashi, M; Jpn J Appl Phys 1996, V35, PL703 HCAPLUS

(6) Funahashi, M; Mol Cryst Liq Cryst 1997, V304, P429 HCAPLUS

(7) Funahashi, M; Phys Rev Lett 1997, V78, P2184 HCAPLUS

(8) Heilmair, H; Phys Rev Lett 1967, P18583

(9) Tang, C; Appl Phys Lett 1987, V51, P12

IT 195375-07-6, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene

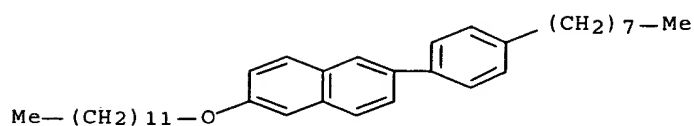
219683-04-2, 2-(4'-Octylphenyl)-6-butyloxynaphthalene

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(new aspects of org. elec. materials in calamitic **liq. cryst.** photoconductors)

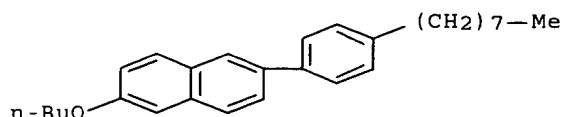
RN 195375-07-6 HCAPLUS

CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



RN 219683-04-2 HCAPLUS

CN Naphthalene, 2-butoxy-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 12 OF 43 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:764397 HCAPLUS

DN 134:24311

TI Effect of domain boundary on carrier transport of calamitic **liquid crystalline** photoconductive materials

AU Maeda, Hiroki; Funahashi, Masahiro; Hanna, Jun-Ichi

CS Central Research Institute, Dai Nippon Printing Co. Ltd., Kashiwa, 277-0871, Japan

SO Molecular Crystals and Liquid Crystals Science and Technology, Section A: Molecular Crystals and Liquid Crystals (2000), 346, 183-192
CODEN: MCLCE9; ISSN: 1058-725X

PB Gordon & Breach Science Publishers

DT Journal

LA English

CC 76-5 (Electric Phenomena)

Section cross-reference(s): 74, 75

AB Smectic mesophases in the calamitic **liq. cryst.** materials such as 2-phenylnaphthalene derivs. exhibit fast ambipolar carrier transport, whose mobility is up to 10⁻² cm²/Vs. For these mesophases, the authors have studied the effect of defects in the bulk and at the domain boundary on these carrier transport by measuring transient photocurrents in thick cells up to 120 .mu.m in thickness and in the cells of different domain sizes of 10-100s .mu.m. Nondispersive carrier transports was obsd. for all the cells and the carrier transport was affected neither by cell thickness nor by domain sizes. Thus, there are few deep defects in the bulk and the domain boundary is elec. inactive in these mesophases, demonstrating their high potential for practical application to large-area electronic devices.

ST domain boundary carrier transport calamitic **liq crystal** photocond

IT **Liquid crystals**

Photoconductors

Photocurrent

(effect of domain boundary on carrier transport of calamitic **liq. cryst.** photoconductive materials)

IT 195375-07-6 219683-04-2

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)

(effect of domain boundary on carrier transport of calamitic

liq. cryst. photoconductive materials)

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

- (1) Adam, D; Phys Rev Lett 1993, V70, P457 HCAPLUS
- (2) Borsenberger, P; Jpn J Appl Phys 1995, V34, PL1597 HCAPLUS
- (3) Borsenberger, P; Organic Photoreceptors for Xerography 1998
- (4) Funahashi, M; Appl Phys Lett 1997, V71(5), P602 HCAPLUS
- (5) Funahashi, M; Appl Phys Lett 1998, V73, P3733 HCAPLUS
- (6) Funahashi, M; Jpn J Appl Phys 1996, V35, PL703 HCAPLUS
- (7) Funahashi, M; Mol Cryst Liq Cryst 1997, V304, P429 HCAPLUS
- (8) Funahashi, M; Phys Rev Lett 1997, V78, P2184 HCAPLUS
- (9) Gibbons, D; J Phys Chem Solids 1998, V29, P115
- (10) Heilmair, G; Phys Rev Lett 1967, P18583
- (11) Tang, C; Appl Phys Lett 1987, V51, P12

IT 195375-07-6 219683-04-2

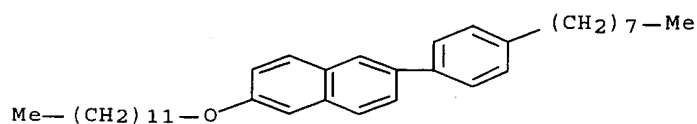
RL: PEP (Physical, engineering or chemical process); PRP (Properties);
PROC (Process)

(effect of domain boundary on carrier transport of calamitic

liq. cryst. photoconductive materials)

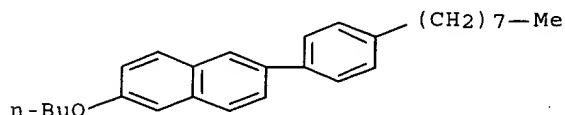
RN 195375-07-6 HCAPLUS

CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



RN 219683-04-2 HCAPLUS

CN Naphthalene, 2-butoxy-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 13 OF 43 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:739324 HCAPLUS

DN 134:156228

TI Photosensitization of smectic photoconductive **liquid crystal** by C70 doping

AU Zhang, Hong; Funahashi, Masahiro; Hanna, Jun-ichi

CS Imaging Science and Engineering Laboratory, Tokyo Institute of Technology, Japan

SO Proceedings of SPIE-The International Society for Optical Engineering (2000), 3939(Organic Photonic Materials and Devices II), 126-134

CODEN: PSISDG; ISSN: 0277-786X

PB SPIE-The International Society for Optical Engineering

DT Journal

LA English

CC 76-5 (Electric Phenomena)

Section cross-reference(s): 73, 74

AB The spectral sensitization and photosensitizer efficiency of a **liq . cryst.** photoconductor, 2-(4'-octylphenyl)-6-dodecyloxynaphthalene (8-PNP-O12) with C70 were investigated by

steady-state and transient photocurrent measurements in terms of temp., elec. field, and doping concn. of C70. The C70-doped **liq. crystal** cell exhibited a photoresponse in visible region of 400-700 nm corresponding to the optical absorption of C70. In the time-of-flight measurement, the fast transient photosignals with fast rise and decay on the order of microseconds were obtained even in a bulk excitation condition, which is governed by the ambipolar carrier transit. In visible region, the same photogeneration efficiency for hole and electron indicated that C70 can inject both electron and hole into 8-PNP-012 when photoexcited. The phase transition temp. did not change by doping C70 but the phase transition was found to have a great influence to the photogeneration yield. In the high ordering SmB phase, the photosensitization yield was found to be about two orders larger than that in the low ordering SmA phase and isotropic phase, where different interaction of C70 was obvious in optical absorption and texture is under polarized microscope.

ST fullerene C70 photosensitization smectic photoconductive **liq crystal**

IT UV and visible spectra
(absorption; spectral photosensitization of smectic **liq. cryst.** photoconductor by C70 to visible region)

IT Photoconductors
(**liq. crystal**; spectral photosensitization of smectic **liq. cryst.** photoconductor by C70 to visible region)

IT Electric current carriers
(photocarriers, generation efficiency; spectral photosensitization of smectic **liq. cryst.** photoconductor by C70 to visible region)

IT **Liquid crystals**
(smectic; spectral photosensitization of smectic **liq. cryst.** photoconductor by C70 to visible region)

IT Absorption spectra
Photoconductivity
Photocurrent

(spectral photosensitization of smectic **liq. cryst.** photoconductor by C70 to visible region)

IT Electrophotographic photoconductors (photoreceptors)
Optical detectors
(spectral photosensitization of smectic **liq. cryst.** photoconductor by C70 to visible region in relation to)

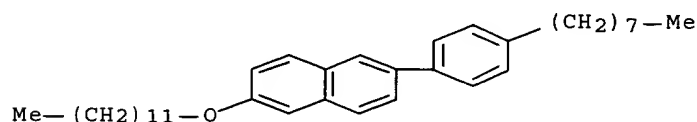
IT **195375-07-6**, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene
RL: PRP (Properties)
(8PNP-012; spectral photosensitization of smectic **liq. cryst.** photoconductor by C70 to visible region)

IT 115383-22-7, C70 Fullerene
RL: MOA (Modifier or additive use); USES (Uses)
(spectral photosensitization of smectic **liq. cryst.** photoconductor by C70 to visible region)

RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

- (1) Adam, D; Phys Rev Lett 1993, V70, P457 HCAPLUS
- (2) Borsenberger, P; Organic Photoconductors for Imaging System 1993
- (3) Funahashi, M; Appl Phys Lett 1997, V71, P602 HCAPLUS
- (4) Funahashi, M; Appl Phys Lett 1997, V71, P602 HCAPLUS
- (5) Funahashi, M; Phys Rev Lett 1997, V78, P2184 HCAPLUS
- (6) Guymon, C; Science 1997, V275, P57 HCAPLUS
- (7) Hosoya, M; Phys Rev B 1994, V49, P4981 HCAPLUS
- (8) Kepler, R; Phys Rev 1960, V119, P1226 HCAPLUS
- (9) Koda, T; J Phys Soc Jpn 1996, V65, P3551 HCAPLUS

(10) Law, K; Chem Rev 1993, V93, P449 HCAPLUS
 (11) Okamoto, K; J Polymer 1975, V7, P622 HCAPLUS
 (12) Tang, C; Applied Physics Letters 1986, V48, P183 HCAPLUS
 (13) Wang, Y; Nature 1992, V356, P585 HCAPLUS
 (14) Wurtz, P; J Appl Phys 1991, V70, P6647
 (15) Zhang, H; J Phys Chem B V103, P7429 HCAPLUS
 IT 195375-07-6, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene
 RL: PRP (Properties)
 (8PNP-O12; spectral photosensitization of smectic **liq.**
cryst. photoconductor by C70 to visible region)
 RN 195375-07-6 HCAPLUS
 CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 14 OF 43 HCAPLUS COPYRIGHT 2003 ACS
 AN 2000:731343 HCAPLUS
 DN 133:288980
 TI **Liquid crystal** element, manufacture of the element,
 control of orientation of **liquid crystal**, and
 carrier-transporting and light-emitting device made of **liquid**
crystal
 IN Asao, Yasushi; Sato, Koichi; Hanyu, Yukio
 PA Canon Inc., Japan
 SO Jpn. Kokai Tokkyo Koho, 13 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM B82B003-00
 ICS H01L051-00; H05B033-14
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other
 Reprographic Processes)
 Section cross-reference(s): 75

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000289000	A2	20001017	JP 1999-100951	19990408
PRAI	JP 1999-100951		19990408		

AB The element of highly oriented **liq. crystal** is manufd.
 as follows. A layer for controlling orientation of a **liq.**
crystal (e.g., lines and spaces of a rubbed polyimide layer) is
 formed on a substrate having electrodes on the surface and a **liq**
crystal (e.g., a 2-phenylnaphthalene deriv.) is placed on the
 layer. Then the 2-phenylnaphthalene deriv. is cooled gradually so that
 the phase is transferred from isotropic to a smectic. The nuclei of the
 smectic phase are generated selectively on the orientation-controlling
 layer and grow anisotropically so that the **liq. crystal**
 is oriented highly. The **liq. crystal** is used as a
 layer which transports holes or electrons or emits light.
 ST **liq crystal** orientation control gradual cooling;
 isotropic smectic transition **liq crystal** orientation;
 carrier transporting **liq crystal** electrophotog
 photoconductor; light emitting **liq crystal**
 electroluminescent device

IT Electroluminescent devices
Electrophotographic photoconductors (photoreceptors)
(carrier-transporting or light-emitting device using highly-oriented
liq. crystal element)

IT Polyimides, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(for orientation control; for carrier-transporting or light-emitting
device using highly-oriented **liq. crystal** element)

IT Cooling
(for phase transition; in manuf. of carrier-transporting or
light-emitting device using highly-oriented **liq.**
crystal element)

IT Phase transition
(in manuf. of carrier-transporting or light-emitting device using
highly-oriented **liq. crystal** element)

IT **Liquid crystal** displays
(manuf. of carrier-transporting or light-emitting device using
highly-oriented **liq. crystal** element for)

IT **Liquid crystals**
(smectic; carrier-transporting or light-emitting device using
highly-oriented **liq. crystal** element)

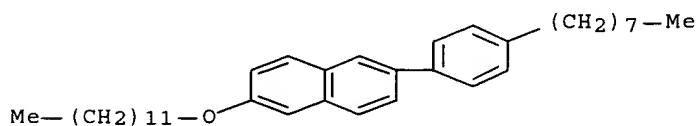
IT **195375-07-6**
RL: DEV (Device component use); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(carrier-transporting or light-emitting device using highly-oriented
liq. crystal element)

IT 25667-69-0, 1,6-Hexamethylenediamine-pyromellitic dianhydride copolymer,
sru 25668-09-1, 1,6-Hexamethylenediamine-pyromellitic dianhydride
copolymer
RL: TEM (Technical or engineered material use); USES (Uses)
(for orientation control; for carrier-transporting or light-emitting
device using highly-oriented **liq. crystal** element)

IT **195375-07-6**
RL: DEV (Device component use); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(carrier-transporting or light-emitting device using highly-oriented
liq. crystal element)

RN 195375-07-6 HCAPLUS

CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 15 OF 43 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:566080 HCAPLUS

DN 133:289510

TI Photohole generation in calamitic **liquid crystalline**
photoconductor, 2-phenylnaphthalene derivatives

AU Zhang, Hong; Hanna, Jun-Ichi

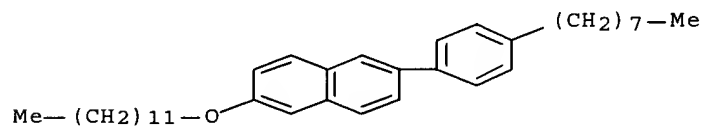
CS Imaging Science and Engineering Lab., Tokyo Institute of Technology,
Yokohama, 226-8503, Japan

SO Polymeric Materials Science and Engineering (2000), 83, 263
CODEN: PMSEDG; ISSN: 0743-0515

PB American Chemical Society

DT Journal

LA English
 CC 76-5 (Electric Phenomena)
 Section cross-reference(s): 74, 75
 AB The photohole generation process was investigated in a calamitic **liq.-cryst.** photoconductor 2-(4'-octylphenyl)-6-dodecyloxynaphthalene. There are two processes present: the bulk generation characterized by a small quantum yield of 10^{-3} and the exciton-exciton interaction and photohole injection from the electrode characterized by a high quantum yield of 10^{-2} and the exciton decay at the interface of the electrode and **liq. crystal**.
 ST octylphenyldodecyloxynaphthalene **liq crystal** photoconductor photohole
 IT Electrophotographic photoconductors (photoreceptors)
 Exciton
 Photoconductors
 Photocurrent
 (photohole generation in calamitic **liq. cryst.** photoconductor octylphenyldodecyloxynaphthalene)
 IT Hole (electron)
 (photohole; photohole generation in calamitic **liq. cryst.** photoconductor octylphenyldodecyloxynaphthalene)
 IT **Liquid crystals**
 (smectic; photohole generation in calamitic **liq. cryst.** photoconductor octylphenyldodecyloxynaphthalene)
 IT **195375-07-6**, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene
 RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (photohole generation in calamitic **liq. cryst.** photoconductor octylphenyldodecyloxynaphthalene)
 RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
 RE
 (1) Funahashi, M; Appl Phys Lett 1997, V71, P602 HCAPLUS
 (2) Funahashi, M; Appl Phys Lett in press 2000
 (3) Funahashi, M; Phys Rev Lett 1997, V78, P2184 HCAPLUS
 (4) Zhang, H; J Appl Phys in press 2000, V87
 (5) Zhang, H; J Phys Chem B 1999, V103, P7429 HCAPLUS
 IT **195375-07-6**, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene
 RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (photohole generation in calamitic **liq. cryst.** photoconductor octylphenyldodecyloxynaphthalene)
 RN 195375-07-6 HCAPLUS
 CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 16 OF 43 HCAPLUS COPYRIGHT 2003 ACS
 AN 2000:513407 HCAPLUS
 DN 133:142680
 TI Information recording medium
 IN Maeda, Hiroki; Kogo, Kyoko; Hanna, Junichi
 PA Dai Nippon Printing Co., Ltd., Japan
 SO Eur. Pat. Appl., 10 pp.
 CODEN: EPXXDW

DT Patent
 LA English
 IC ICM G11B007-24
 ICS C09K019-02
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 Section cross-reference(s): 75

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1022732	A1	20000726	EP 2000-100029	20000104
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2000207770	A2	20000728	JP 1999-2955	19990108
PRAI	JP 1999-2955	A	19990108		

AB A novel information recording medium is provided which records information upon the application of thermal energy, reads the recorded information by detecting the value of photoelec. current generated by light applied to the information recorded portion, and can realize multi-valued information recording or analog information recording. The information recording medium comprises: a pair of electrodes; and a **liq. crystal** material filled into a gap between the electrodes, the **liq. crystal** material having a property such that the charge-transport properties are varied according to the phase transit between a plurality of stable **liq. crystal** phases of the **liq. crystal**.

ST **liq crystal** thermal recording medium charge transport

IT Electron transfer

Liquid crystals

Photoconductors

(Information thermal recording medium using **liq. crystals**)

IT Recording materials

(thermal; Information thermal recording medium using **liq. crystals**)

IT **Liquid crystals**

(transitions; Information thermal recording medium using **liq. crystals**)

IT **195375-07-6**, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(**liq. crystal**, 8-PNP-O12; Information thermal recording medium using **liq. crystals**)

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Akzo Nobel Nv; EP 0651381 A 1995
- (2) Anon; PATENT ABSTRACTS OF JAPAN 1984, V008(136), PM-304
- (3) Anon; PATENT ABSTRACTS OF JAPAN 1999, V1999(02)
- (4) Dainippon Printing Co Ltd; JP 10312711 A 1998 HCAPLUS
- (5) Eich, M; US 4886718 A 1989 HCAPLUS
- (6) Fuji Xerox Co Ltd; EP 0669548 A 1995 HCAPLUS
- (7) Garrett, T; US 4780383 A 1988 HCAPLUS
- (8) Konishiroku Shashin Kogyo Kk; JP 59035989 A 1984 HCAPLUS
- (9) Marconi Gec Ltd; GB 2248963 A 1992

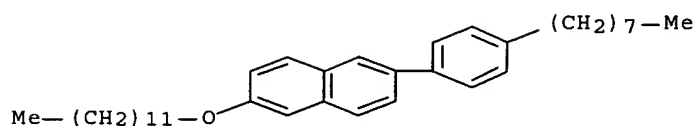
IT **195375-07-6**, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(**liq. crystal**, 8-PNP-O12; Information thermal recording medium using **liq. crystals**)

RN **195375-07-6** HCAPLUS

CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 17 OF 43 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:491012 HCAPLUS

DN 133:245029

TI **Liquid crystalline** semiconductors as opto-electronic imaging materials

AU Funahashi, Masahiro; Hanna, Junichi

CS Imaging Science and Engineering Laboratory, Tokyo Institute of Technology, Nagatsuta, Midori-ku, Yokohama, 226-8503, Japan

SO Nippon Shashin Gakkaishi (2000), 63(2), 69-77

CODEN: NSGKAP; ISSN: 0369-5662

PB Nippon Shashin Gakkai

DT Journal

LA Japanese

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 75, 76

AB Org. amorphous semiconductor films are widely applied to xerog. applications and electroluminescence devices due to feasibility of prepg. large-area and uniform thin films in low cost. Their elec. properties, in particular, the carrier transport properties, however, are far from ideal properties in their mol. crystals and limit their device applications as they are. Recently we have developed a new type of org. semiconductors with **liq. crystallinity** in which we expected fast carrier transport due to the self-organizing mol. alignment. In fact, 2-phenylnaphthalene derivs., which are a representative material of this type, exhibit the superior carrier transport properties characterized by a fast ambipolar carrier mobility of 10⁻⁴ .apprx. 10⁻²cm²/Vs independent of temp. and elec. field. In this paper, we survey its carrier transport properties on the basis of our exptl. results and discuss them in comparison with those in the amorphous semiconductors to demonstrate its high potential as a new type of opto-electronic imaging materials in the future. In addn., new properties originated from anisotropic mol. alignment and their application to polarized light emitting diodes are also demonstrated.

ST **liq cryst** semiconductor optoelectronic imaging material

IT Electroluminescent devices

Emission spectra

Optical imaging devices

Photoconductivity

(**liq. cryst.** semiconductors as opto-electronic imaging materials)

IT Semiconductor materials

(org., **liq. cryst.**; **liq. cryst.**

semiconductors as opto-electronic imaging materials)

IT **Liquid crystals**

(smectic; **liq. cryst.** semiconductors as opto-electronic imaging materials)

IT 195375-07-6 219683-04-2

RL: PRP (Properties); TEM (Technical or engineered material use); USES

(Uses)

(**liq. cryst.** semiconductors as opto-electronic
imaging materials)

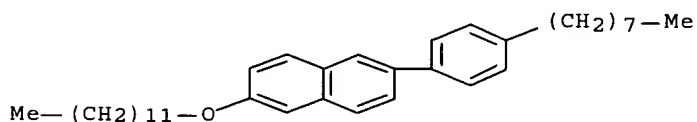
IT 195375-07-6 219683-04-2

RL: PRP (Properties); TEM (Technical or engineered material use); USES
(Uses)

(**liq. cryst.** semiconductors as opto-electronic
imaging materials)

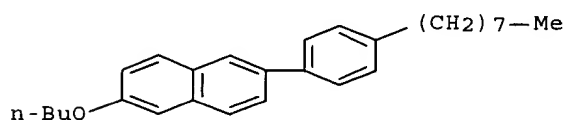
RN 195375-07-6 HCAPLUS

CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



RN 219683-04-2 HCAPLUS

CN Naphthalene, 2-butoxy-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 18 OF 43 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:470458 HCAPLUS

DN 133:96880

TI Driving method of **liquid crystal** device

IN Hanna, Junichi; Funabashi, Masahiro; Aida, Tadashi; Kurotaki, Kensuke;
Cho, Hiroshi; Takeuchi, Tomoo; Kogo, Kyoko

PA Dainippon Printing Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C09K019-32

ICS G02F001-13; H05B033-08; H05B033-14

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)

Section cross-reference(s): 73, 75, 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	-----	-----	-----
PI	JP 2000192042	A2	20000711	JP 1998-368029	19981224
PRAI	JP 1998-368029		19981224		

AB The title driving method utilizes a charge transport **liq. crystal**, 2-(4'-octylphenyl)-6-butoxynaphthalene, which shows a smectic E phase at an operation temp. The **liq. crystal** device may be an electroluminescence device, photoconductor, spatial light modulator, thin film transistor, or temp. sensor.

ST driving method **liq crystal** device charge transport
liq crystal

IT Electroluminescent devices

Liquid crystals

Optical sensors
 Photoconductors
 Spatial light modulators
 Temperature sensors
 Thin film transistors
 (driving method of **liq. crystal** device utilizing
 specific charge transport **liq. crystal** showing
 smectic E phase)

IT 219683-04-2P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)
 (driving method of **liq. crystal** device utilizing
 specific charge transport **liq. crystal** showing
 smectic E phase)

IT 109-65-9, 1-Bromobutane 15231-91-1, 2-Bromo-6-naphthol 51554-93-9,
 p-Octyl-bromobenzene

RL: RCT (Reactant); RACT (Reactant or reagent)
 (prepn. of charge transport **liq. crystal** showing
 smectic E phase)

IT 66217-20-7P, 2-Bromo-6-butoxynaphthalene 133997-05-4P

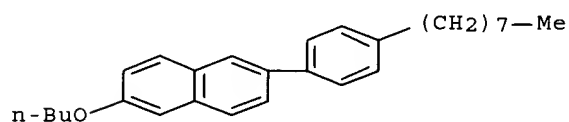
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (prepn. of charge transport **liq. crystal** showing
 smectic E phase)

IT 219683-04-2P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)
 (driving method of **liq. crystal** device utilizing
 specific charge transport **liq. crystal** showing
 smectic E phase)

RN 219683-04-2 HCAPLUS

CN Naphthalene, 2-butoxy-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 19 OF 43 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:427518 HCAPLUS

DN 133:158377

TI Electrode effect on photohole generation in smectic phenylnaphthalene
liquid crystalline photoconductor

AU Zhang, Hong; Hanna, Jun-ichi

CS Tokyo Institute of Technology, Yokohama, 226-8503, Japan

SO Journal of Applied Physics (2000), 88(1), 270-277

CODEN: JAPIAU; ISSN: 0021-8979

PB American Institute of Physics

DT Journal

LA English

CC 76-5 (Electric Phenomena)

Section cross-reference(s): 75

AB The photohole generation process in the smectic phases of a **liq.**
cryst. photoconductor, 2-(4'-octylphenyl)-6-dodecyoxynaphthalene
 (8-PNP-012) with different illuminated contact electrodes was investigated
 through steady-state and transient photocurrent measurements. It was
 revealed that the photogeneration of holes was governed by two different

processes according to the electrode materials: the Onsager type of photocarrier generation in the bulk and the electrode-enhanced hole photoinjection with a delay of .mu.s when Al, and either Pt or In2O3-SnO2 electrodes are applied, resp. In the latter process, the photogeneration yield was one order of magnitude larger than that in the bulk generation process, but decreased as the mol. ordering degraded from the smectic B phase to the smectic A phase, then to the isotropic phase. According to the spectral response and the results of addnl. expts. on the effect of chem. doping with electron acceptors, the photohole injection was concluded to be attributed to the exciton decay at the interface of the electrode and **liq. crystal**, i.e., the charge transfer from photoexcited 8-PNP-O12 mols. to the electrode. The exptl. results were analyzed according to a one-dimensional Onsager model and the diffusion length of excitons in the SmB phase was detd. to be 30.+-.10 nm.

ST octylphenyldodecyoxynaphthalene **liq crystal**
photoconductor photohole electrode

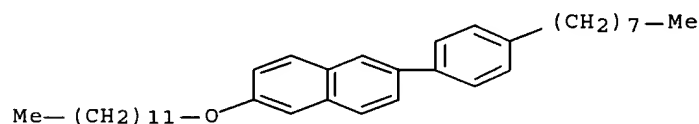
- IT Exciton
(decay; electrode effect on photohole generation in smectic phenylnaphthalene **liq. cryst.** photoconductor)
- IT Electric field effects
Electrodes
Electron transfer
Hole (electron)
Order
Photoconductors
Photocurrent
(electrode effect on photohole generation in smectic phenylnaphthalene **liq. cryst.** photoconductor)
- IT **Liquid crystals**
(smectic; electrode effect on photohole generation in smectic phenylnaphthalene **liq. cryst.** photoconductor)
- IT **195375-07-6**
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(electrode effect on photohole generation in smectic phenylnaphthalene **liq. cryst.** photoconductor)
- IT 7429-90-5, Aluminum, uses 7440-06-4, Platinum, uses 50926-11-9, ITO
RL: DEV (Device component use); USES (Uses)
(electrode; electrode effect on photohole generation in smectic phenylnaphthalene **liq. cryst.** photoconductor)

RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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 (20) Pope, M; Electronic Processes in Organic Crystals, Chap 3 1982
 (21) Ries, B; Philos Mag B 1983, V48, P87 HCAPLUS
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 (23) Yu, N; Chem Phys Lett 1996, V255, P93
 (24) Zhang, H; J Phys Chem B 1999, V103, P7429 HCAPLUS
 IT 195375-07-6
 RL: PRP (Properties); TEM (Technical or engineered material use); USES
 (Uses)
 (electrode effect on photohole generation in smectic phenylnaphthalene
liq. cryst. photoconductor)
 RN 195375-07-6 HCAPLUS
 CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)

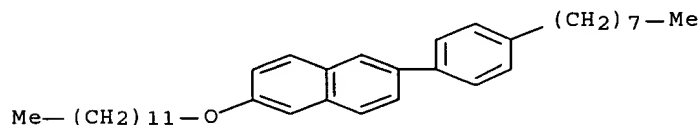


L97 ANSWER 20 OF 43 HCAPLUS COPYRIGHT 2003 ACS
 AN 2000:143506 HCAPLUS
 DN 132:187722
 TI Method for driving of **liquid crystal**
 charge-transporting device
 IN Hanna, Junichi; Aida, Tadashi; Kurotaki, Kensuke; Cho, Hiroshi; Takeuchi,
 Tomoo; Funabashi, Masahiro; Kogo, Kyoko
 PA Dainippon Printing Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 11 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H05B033-08
 ICS H05B033-14; H05B033-22; C09K019-32
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other
 Reprographic Processes)
 Section cross-reference(s): 73
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000068052	A2	20000303	JP 1998-239735	19980826
PRAI	JP 1998-239735		19980826		

AB The method for the driving of a **liq. crystal** device
 includes a **liq. crystal** charge transporting material,
 wherein the **liq. crystal** device is driven at the temp.
 for the **liq. crystal** charge transporting material to
 show the highest **liq. crystallinity**. The method
 provides the improved **liq. crystal** device driving
 characteristics.
 ST **liq crystal** display device driving method
 IT Charge transfer interaction
 Electroluminescent devices
 Optical imaging devices
 (method for driving of **liq. crystal**
 charge-transporting device)
 IT **Liquid crystals**
 (smectic; method for driving of **liq. crystal**
 charge-transporting device)

IT 195375-07-6
 RL: DEV (Device component use); USES (Uses)
 (liq. crystal for charge-transporting device)
 IT 259541-03-2
 RL: DEV (Device component use); USES (Uses)
 (luminescent material for charge-transporting device)
 IT 195375-07-6
 RL: DEV (Device component use); USES (Uses)
 (liq. crystal for charge-transporting device)
 RN 195375-07-6 HCAPLUS
 CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 21 OF 43 HCAPLUS COPYRIGHT 2003 ACS
 AN 2000:36993 HCAPLUS
 DN 132:272034
 TI Photohole generation in smectic **liquid crystalline** photoconductor
 AU Zhang, Hong; Maeda, Hiroki; Funahashi, Masahiro; Hanna, Jun-ichi
 CS Imaging Science and Eng. Lab., Tokyo Institute of Technology, Japan
 SO Proceedings of SPIE-The International Society for Optical Engineering (1999), 3799 (Organic Photorefractives, Photoreceptors, Waveguides, and Fibers), 168-177
 CODEN: PSISDG; ISSN: 0277-786X
 PB SPIE-The International Society for Optical Engineering
 DT Journal
 LA English
 CC 76-1 (Electric Phenomena)
 Section cross-reference(s): 73, 75
 AB The photo-hole generation process in the smectic phases of a **liq** . **cryst.** photoconductor, 2-(4'-octylphenyl)-6-dodecyoxynaphthalene (8-PNP-012) was studied by using steady-state and transient photocurrent measurements. The photo-generation of holes was governed by two different processes: Onsager type of photo-carrier generation in the bulk and electrode-enhanced hole injection induced by the charge transfer from photoexcited 8-PNP-012 mols. to the electrode interface. In the former process, for fairly high light intensity, the collected photo-generation charge is approx. proportional to the square of the light intensity irresp. of the phase, suggesting the contribution of exciton-exciton interactions. And in the latter process, the photogeneration quantum yield can be one order of magnitude larger than that in the bulk generation process. The authors will discuss totally the photo-carrier generation process in mesophases of 8-PNP-012, in terms of exciton-exciton and exciton-electrode interactions including the effect of electrode materials and the disorder of mol. arrangement.
 ST photohole smectic **liq crystal** photoconductor
 IT Exciton
 (contribution from; photohole generation in smectic **liq.** **cryst.** photoconductor)
 IT Electric current carriers
 (photocarriers; photohole generation in smectic **liq.** **cryst.** photoconductor)
 IT Electron transfer

Fluorescence
 Photoconductors
 Photocurrent
 Photoexcitation
 UV and visible spectra
 (photohole generation in smectic **liq. cryst.**
 photoconductor)

IT Hole (electron)
 (photohole; photohole generation in smectic **liq.**
cryst. photoconductor)

IT **Liquid crystals**
 (smectic; photohole generation in smectic **liq. cryst.**
 . photoconductor)

IT 129-79-3
 RL: MOA (Modifier or additive use); USES (Uses)
 (dopant; photohole generation in smectic **liq. cryst.**
 . photoconductor)

IT 7429-90-5, Aluminum, properties 7440-06-4, Platinum, properties
 50926-11-9, Indium tin oxide
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (electrode; photohole generation in smectic **liq.**
cryst. photoconductor)

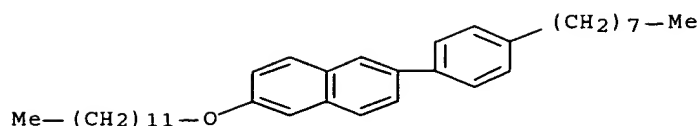
IT **195375-07-6**, 2-(4'-Octylphenyl)-6-dodecyoxynaphthalene
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (photohole generation in smectic **liq. cryst.**
 photoconductor)

RE.CNT 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD
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- (23) Tang, C; Applied Physics Letters 1986, V48, P183 HCAPLUS

IT **195375-07-6**, 2-(4'-Octylphenyl)-6-dodecyoxynaphthalene
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (photohole generation in smectic **liq. cryst.**
 photoconductor)

RN 195375-07-6 HCAPLUS
 CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 22 OF 43 HCAPLUS COPYRIGHT 2003 ACS

AN 1999:756141 HCAPLUS

DN 132:17193

TI Manufacture of information recording device containing **liquid crystalline** charge-transporting substance

IN Kashiwabara, Mitsuhiro; Aoki, Daigo; Hanna, Junichi

PA Dainippon Printing Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM G11B007-24

ICS G02F001-135; G11B007-26

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 75

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11328722	A2	19991130	JP 1998-138091	19980520
PRAI	JP 1998-138091		19980520		

AB The device contains an electrode-formed pair of substrates sandwiching a photoconductive layer and a **liq. crystal** layer-based information recording layer, in which the former layer contains a **liq. cryst.** charge-transporting substance. The manuf. method involves (1) forming a charge-injection controlling layer and an optional charge-generating layer on one of the electrodes, (2) forming an information recording layer on the other electrode, (3) adhering the electrodes via a spacer to form a cell, and (4) filling the substance into the cell. The device is capable of rapidly recording information.

ST recording optical **liq crystal** charge transporter; naphthalene **liq crystal** charge transporter optical sensor; photoconductive recording layer optical information

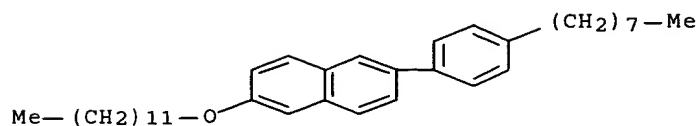
IT **Liquid crystal** displays
Liquid crystals
 Optical sensors
 Photoconductors
 (manuf. of information recording device contg. **liq. cryst.** charge-transporting substance)

IT 5521-31-3 55034-81-6
 RL: DEV (Device component use); USES (Uses)
 (charge generator; manuf. of information recording device contg. **liq. cryst.** charge-transporting substance)

IT **195375-07-6**, 2,4'-Octylphenyl-6-dodecyloxynaphthalene
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (manuf. of information recording device contg. **liq. cryst.** charge-transporting substance)

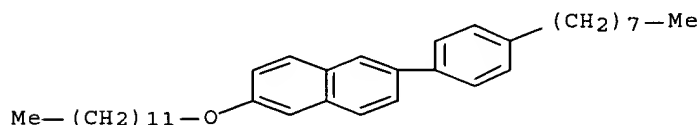
IT **195375-07-6**, 2,4'-Octylphenyl-6-dodecyloxynaphthalene
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (manuf. of information recording device contg. **liq. cryst.** charge-transporting substance)

RN 195375-07-6 HCAPLUS
CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)

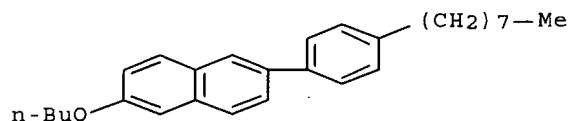


L97 ANSWER 23 OF 43 HCAPLUS COPYRIGHT 2003 ACS
AN 1999:661665 HCAPLUS
DN 132:8061
TI Carrier transport in calamitic mesophases of **liquid crystalline** photoconductor 2-phenylnaphthalene derivatives
AU Funahashi, Masahiro; Hanna, Jun-Ichi
CS Imaging Science and Engineering Laboratory, Tokyo Institute of Technology, Kanagawa, 226-0008, Japan
SO Molecular Crystals and Liquid Crystals Science and Technology, Section A: Molecular Crystals and Liquid Crystals (1999), 331, 2369-2376
CODEN: MCLCE9; ISSN: 1058-725X
PB Gordon & Breach Science Publishers
DT Journal
LA English
CC 76-5 (Electric Phenomena)
Section cross-reference(s): 75
AB The authors have characterized carrier transport in mesophases of 2-phenyl-naphthalene derivs. by transient photocurrent measurements. In contrast to ionic conduction of isotropic and nematic (N) phase, electronic and ambipolar carrier transport was obsd. in smectic A (SmA), smectic B (SmB), and smectic E (SmE) phases. In particular, anomalous large mobilities .apprx.10-2cm²/Vs were obtained in SmE phase. Carrier mobilities in mesophases of 2-phenylnaphthalene derivs. were increased stepwise corresponding to sophistication of mol. ordering from N to SmE. This indicated a dominant effect of mol. ordering on the carrier transport of calamitic mesophases.
ST **liq crystal** calamitic mesophases photoconductor
carrier transport; phenylnaphthalene deriv **liq crystal**
photocond
IT Ionic conductivity
Liquid crystals
Photoconductivity
Photoconductors
(carrier transport in calamitic mesophases of **liq. cryst.** photoconductor 2-phenylnaphthalene derivs.)
IT Electric current carriers
(mobility; carrier transport in calamitic mesophases of **liq. cryst.** photoconductor 2-phenylnaphthalene derivs.)
IT Photocurrent
(transient; carrier transport in calamitic mesophases of **liq. cryst.** photoconductor 2-phenylnaphthalene derivs.)
IT 126883-46-3, 2-(4'-Pentylphenyl)-6-methyoxynaphthalene 195375-07-6, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene 219683-04-2, 2-(4'-Octylphenyl)-6-butyloxynaphthalene
RL: PRP (Properties)
(carrier transport in calamitic mesophases of **liq. cryst.** photoconductor 2-phenylnaphthalene derivs.)
RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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 IT 195375-07-6, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene
 219683-04-2, 2-(4'-Octylphenyl)-6-butyloxynaphthalene
 RL: PRP (Properties)
 (carrier transport in calamitic mesophases of **liq.**
cryst. photoconductor 2-phenylnaphthalene derivs.)
 RN 195375-07-6 HCAPLUS
 CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)

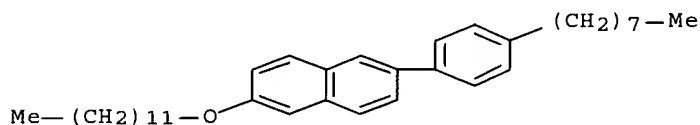


RN 219683-04-2 HCAPLUS
 CN Naphthalene, 2-butoxy-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 24 OF 43 HCAPLUS COPYRIGHT 2003 ACS
 AN 1999:572081 HCAPLUS
 DN 131:206764
 TI Electric charge-transporting **liquid crystalline**
 material
 IN Hanna, Junichi; Kogo, Kyoko; Yoshihara, Toshio
 PA Dainippon Printing Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM C09K019-54
 ICS G02F001-13; H05B033-14; H05B033-22; G03G005-06
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related
 Properties)
 Section cross-reference(s): 75
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11241069	A2	19990907	JP 1998-218148	19980731
PRAI	JP 1997-352847		19971222		
AB	The title material having polarized electroluminescence, suited for use in an electrooptic switch, a display panel, and an electroluminescent device, comprises: either a liq. cryst. material having electroluminescent and charge-transporting properties; or an electroluminescent material and a charge-transporting liq. cryst. material.				
ST	charge transporting electroluminescence liq crystal				
IT	Liquid crystals (elec. charge-transporting liq. cryst. material)				
IT	Phosphors (electroluminescent; elec. charge-transporting liq. cryst. material)				
IT	38215-36-0	41175-45-5	56117-20-5	56117-24-9	188754-25-8,
	2-(4-Heptyloxyphenyl)-6-dodecylbenzothiazole 195375-07-6				
	242140-73-4				
	RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses) (elec. charge-transporting liq. cryst. material)				
IT	195375-07-6				
	RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses) (elec. charge-transporting liq. cryst. material)				
RN	195375-07-6 HCAPLUS				
CN	Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)				



L97 ANSWER 25 OF 43 HCAPLUS COPYRIGHT 2003 ACS

AN 1999:505312 HCAPLUS

DN 131:251043

TI Photocarrier Generation in Smectic Phenyl-naphthalene **Liquid Crystalline** Photoconductor

AU Zhang, Hong; Hanna, Junichi

CS Imaging Science and Engineering Laboratory, Tokyo Institute of Technology, Midori-ku Yokohama, 226-8503, Japan

SO Journal of Physical Chemistry B (1999), 103(35), 7429-7434
CODEN: JPCBFK; ISSN: 1089-5647

PB American Chemical Society

DT Journal

LA English

CC 76-5 (Electric Phenomena)
Section cross-reference(s): 75

AB The intrinsic hole photogeneration process in different phases of a smectic **liq. cryst.** photoconductor, 2-(4'-octylphenyl)-6-dodecyloxynaphthalene (8-PNP-O12) was studied as a function of elec. field and light intensity by using the time-of-flight transient photocurrent technique. The collected photogeneration charges are approx. proportional to the square of the light intensity irrespectively of the phases. A model assuming Onsager type of carrier generation involving double-exciton interaction process, gave a good agreement with the

obtained exptl. results. The mol. ordering is found to promote the dissocn. of the electron-hole pairs. The thermalization distance, r_0 , was very large and comparable with those in mol. crystals such as anthracene, indicating that the carrier generation process in smectic mesophases is analogous to that in org. mol. crystals rather than that in org. liqs.

ST hole photogeneration smectic octylphenyldodecyloxynaphthalene

IT Exciton

(in intrinsic hole photogeneration process in different phases of a smectic **liq. cryst.** photoconductor)

IT Electron-hole pairs

Hole (electron)

Photoionization

(intrinsic hole photogeneration process in different phases of a smectic **liq. cryst.** photoconductor)

IT Order

(intrinsic hole photogeneration process in different phases of a smectic **liq. cryst.** photoconductor in relation to)

IT Simulation and Modeling, physicochemical

(of intrinsic hole photogeneration process in different phases of a smectic **liq. cryst.** photoconductor)

IT **Liquid crystals**

(smectic; intrinsic hole photogeneration process in different phases of a smectic **liq. cryst.** photoconductor)

IT Photoconductivity

(transient; intrinsic hole photogeneration process in different phases of a smectic **liq. cryst.** photoconductor)

IT **195375-07-6**, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene

RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

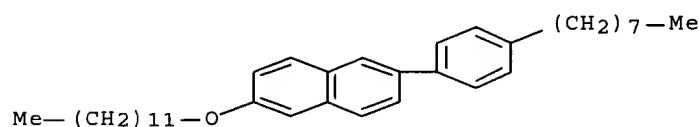
(intrinsic hole photogeneration process in different phases of a smectic **liq. cryst.** photoconductor)

RE.CNT 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD

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 IT 195375-07-6, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
 (Technical or engineered material use); PROC (Process); USES (Uses)
 (intrinsic hole photogeneration process in different phases of a
 smectic **liq. cryst.** photoconductor)
 RN 195375-07-6 HCAPLUS
 CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 26 OF 43 HCAPLUS COPYRIGHT 2003 ACS
 AN 1999:463487 HCAPLUS
 DN 131:109222
 TI Smectic **liquid crystal** charge transfer material
 IN Hanna, Junichi; Kurotaki, Kensuke; Chang, Hong; Goda, Tadashi; Takeuchi,
 Tomoo; Kogo, Kyoko; Funahashi, Masahiro
 PA Dainippon Printing Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 58 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM C09K019-32
 ICS G02F001-13
 CC 75-1 (Crystallography and Liquid Crystals)
 Section cross-reference(s): 73, 74, 76
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11199871	A2	19990727	JP 1998-2537	19980108
PRAI	JP 1998-2537		19980108		
OS	MARPAT 131:109222				
AB	The material comprises a smectic liq. crystal compd.-contg. mixt. An optical sensor, a photoconductor, an image formation device, an electroluminescent device, a spatial conversion device, a thin film transistor, a temp. sensor, and a photorefractive device using the material are claimed. The material shows good driving property in a wide temp. range.				
ST	smectic liq crystal charge transfer material; optical temp sensor smectic liq crystal ; electroluminescent				

device smectic **liq crystal**; photoconductor transistor
 smectic **liq crystal**

IT Electroluminescent devices
 Optical sensors
 Photoconductors
 Photorefractive materials
 Temperature sensors
 Thin film transistors
 (smectic **liq. crystal**-based charge-transfer material)

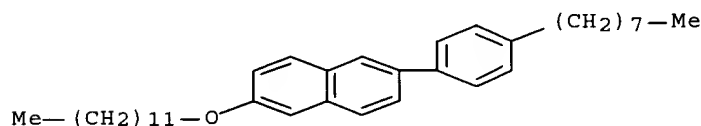
IT **Liquid crystals**
 (smectic; smectic **liq. crystal**-based charge-transfer material)

IT **195375-07-6**, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene
 229975-57-9
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (smectic **liq. crystal**-based charge-transfer material)

IT **195375-07-6**, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (smectic **liq. crystal**-based charge-transfer material)

RN 195375-07-6 HCAPLUS

CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 27 OF 43 HCAPLUS COPYRIGHT 2003 ACS

AN 1999:409290 HCAPLUS

DN 131:94984

TI Polymer film containing dispersed **liquid crystal** charge carrier material

IN Hanna, Junichi; Kogo, Kyoko; Yoshihara, Toshio

PA Dainippon Printing Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 58 pp.
 CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C08L101-00
 ICS C08K005-00; G02F001-13; G02F001-1333; H01B001-20; H05B033-14;
 H05B033-22; C09K011-06

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 Section cross-reference(s): 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11172118	A2	19990629	JP 1997-342440	19971212
PRAI	JP 1997-342440		19971212		

AB The polymer film contg. dispersed a **liq. crystal** charge carrier material has a charge carrying smectic **liq. crystal** in an org. polymer matrix. The polymer film provides

liq. crystal material as a patternable film without using a cell.

ST polymer film smectic liq crystal charge carrier

IT **Liquid crystals**
Liquid crystals
(films, charge carrier; polymer film contg. dispersed liq. crystal charge carrier material)

IT Films
Films
(liq.-crystal, charge carrier; polymer film contg. dispersed liq. crystal charge carrier material)

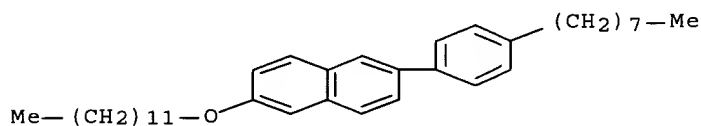
IT **Liquid crystals**
(smectic; polymer film contg. dispersed liq. crystal charge carrier material)

IT 9011-14-7, Methyl methacrylate homopolymer 67653-78-5, Aronix M 400 homopolymer 188754-25-8 **195375-07-6**
RL: TEM (Technical or engineered material use); USES (Uses)
(polymer film contg. dispersed liq. crystal charge carrier material)

IT **195375-07-6**
RL: TEM (Technical or engineered material use); USES (Uses)
(polymer film contg. dispersed liq. crystal charge carrier material)

RN 195375-07-6 HCAPLUS

CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 28 OF 43 HCAPLUS COPYRIGHT 2003 ACS

AN 1999:388633 HCAPLUS

DN 131:81656

TI **Liquid-crystalline** charge-transporting materials including fullerene-C70 and devices utilizing the same

IN Hanna, Junichi; Kogo, Kyoko; Yoshihara, Toshio

PA Dainippon Printing Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 39 pp.
CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H05B033-22
ICS H05B033-22; G03G005-06; H01B001-04; C09K011-06

CC 76-14 (Electric Phenomena)
Section cross-reference(s): 73

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11162648	A2	19990618	JP 1997-325645	19971127
PRAI	JP 1997-325645		19971127		

AB The materials, showing good photosensitivity in long-wavelength regions, comprise smectic liq. crystals and fullerene-C70 preferably at wt. ratio 100:(0.0001-5). Sensors, photoconductors, displays, LEDs, spatial modulators, TFTs, thermometers, and photorefractive devices contg. the materials in their driving circuits are also claimed.

ST fullerene smectic **liq crystal** mixt charge
transporting; red wavelength photosensitivity fullerene **liq crystal**; octylphenyldodecyloxynaphthalene fullerene blend charge
transporting material

IT Photorefractive effect
(devices utilizing; **liq.-cryst.** charge-transporting
materials contg. fullerene-C70 and showing sensitivity in red
wavelength region)

IT Electroluminescent devices
Optical imaging devices
Photoconductors
Sensors
Spatial light modulators
Thermometers
Thin film transistors
(**liq.-cryst.** charge-transporting materials contg.
fullerene-C70 and showing sensitivity in red wavelength region)

IT Electric charge
(transporting materials; **liq.-cryst.**
charge-transporting materials contg. fullerene-C70 and showing
sensitivity in red wavelength region)

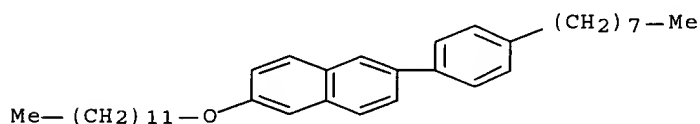
IT 188754-25-8, 2-(4'-Heptyloxyphenyl)-6-dodecylbenzothiazole
195375-07-6, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene
RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)
(**liq.-cryst.** charge-transporting materials contg.
fullerene-C70 and showing sensitivity in red wavelength region)

IT 115383-22-7, [5,6]Fullerene-C70-D5h(6)
RL: MOA (Modifier or additive use); TEM (Technical or engineered material
use); USES (Uses)
(**liq.-cryst.** charge-transporting materials contg.
fullerene-C70 and showing sensitivity in red wavelength region)

IT **195375-07-6**, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene
RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)
(**liq.-cryst.** charge-transporting materials contg.
fullerene-C70 and showing sensitivity in red wavelength region)

RN 195375-07-6 HCAPLUS

CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 29 OF 43 HCAPLUS COPYRIGHT 2003 ACS

AN 1999:377249 HCAPLUS

DN 131:94777

TI Carrier transport in molecularly diluted **liquid-crystal**
photoconductor

AU Kurotaki, K.; Hanna, J.-I.

CS Imaging Science and Engineering Laboratory, Tokyo Institute of Technology,
Yokohama, 226-8503, Japan

SO Journal of Imaging Science and Technology (1999), 43(3), 237-241
CODEN: JIMTE6; ISSN: 1062-3701

PB Society for Imaging Science and Technology

DT Journal

LA English

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 76

AB The carrier transport properties of a molecularly dild. smectic **liq.-crystal** photoconductor, 2-(4'-octylphenyl)-6-dodecyloxynaphthalene (I) in 4-hexyloxy-4'-octylbiphenyl, were investigated by time-of-flight technique in order to clarify the nature of electronic conduction in the **liq. cryst.** mesophases. The mobility in the dild. **liq. crystals** was ambipolar, independent of both elec. field and temp. in SmA and SmB phases as in the pure I and continuously reduced with an increase in the diluent concn. The redn., however, remained within a small range of one third of that of pure material even at 60 mol%. The carrier transport in the dild. **liq. crystals** was described by the relation of $\mu/\rho \cdot \text{varies} \cdot \exp(-2\rho/\rho_0)$, where μ is the mobility, ρ the av. hopping distance, and ρ_0 the wavefunction decay const. of MO, indicating the 2-dimensional random hopping mechanism. The fairly large ρ_0 of 2.3-2.4 Å characterized a fast mobility gently decreasing with an increase in the diluent concn. The mol. ordering within a smectic layer did not affect the carrier transport properties at all except the initial difference of the mobility as far as comparison of those in SmA and SmB phases were concerned. In addn., the effect of self-organization of hopping site was described in terms of carrier transport in a disordered material system.

ST carrier transport dild **liq cryst** photoconductor

IT Electrophotographic photoconductors (photoreceptors)

Photoconductors

(carrier transport in molecularly dild. **liq.-crystal**)

IT Electric current carriers

(transport; in molecularly dild. **liq.-crystal** photoconductors)

IT **195375-07-6**, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(carrier transport in molecularly dild. **liq.-crystal** photoconductors contg.)

IT 229975-57-9

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

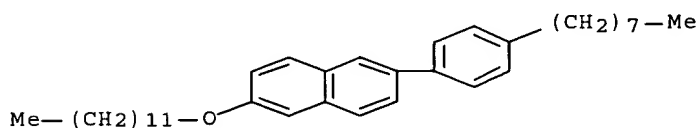
(carrier transport in molecularly dild. **liq.-crystal** photoconductors contg. (octylphenyl)dodecyloxynaphthalene in)

RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD

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 IT 195375-07-6, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene
 RL: PRP (Properties); TEM (Technical or engineered material use); USES
 (Uses)
 (carrier transport in molecularly dild. **liq.-crystal**
 photoconductors contg.)
 RN 195375-07-6 HCAPLUS
 CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 30 OF 43 HCAPLUS COPYRIGHT 2003 ACS
 AN 1999:276943 HCAPLUS
 DN 131:26439
 TI Microsecond photoresponse in **liquid crystalline**
 photoconductor doped with C70 under illumination of visible light
 AU Funahashi, Masahiro; Hanna, Jun-ichi
 CS Imaging Science and Engineering Laboratory, Tokyo Institute of Technology,
 Nagatsuta, Midori-ku, Yokohama, 226-8503, Japan
 SO Applied Physics Letters (1999), 74(18), 2584-2586
 CODEN: APPLAB; ISSN: 0003-6951
 PB American Institute of Physics
 DT Journal
 LA English
 CC 76-5 (Electric Phenomena)
 Section cross-reference(s): 74, 75
 AB Steady-state and transient photocurrent measurements were carried out for
 C70-doped **liq. cryst.** photoconductor,
 2-(4'-octylphenyl)-6-dodecyloxy-naphthalene (8-PNP-012) to clarify its
 spectral photosensitization in visible region. The C70-doped **liq**
. crystal cells exhibited a photoresponse in visible region of
 400-700 nm corresponding to the optical absorption of C70. In the
 time-of-flight measurement, the fast transient photosignals with fast rise
 and decay on the order of microseconds were obtained even in a bulk
 excitation condition, which is governed by the carrier transit. These
 indicated that C70 can inject both electron and hole into 8-PNP-012 when
 photoexcited and does not deteriorate the carrier transport, demonstrating
 a possible application of **liq. cryst.** photoconductors
 to high-speed photosensors with a fast response in microseconds.
 ST transient photocond **liq crystal** fullerene doped;
 octylphenyl dodecyloxy naphthalene mesophase fullerene doped photoresponse
 IT Optical absorption
 (C70; in microsecond photoresponse in **liq. cryst.**
 photoconductor doped with carbon cluster under illumination of visible
 light)
 IT Dopants
Liquid crystals
 Photoconductors
 Photocurrent

(microsecond photoresponse in **liq. cryst.**
photoconductor doped with carbon cluster under illumination of visible
light)

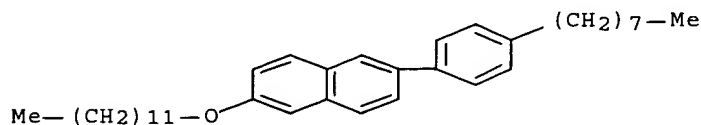
- IT Photoconductivity
(transient; microsecond photoresponse in **liq. cryst.**
photoconductor doped with carbon cluster under illumination of
visible light)
- IT 115383-22-7, C70 Fullerene
RL: MOA (Modifier or additive use); USES (Uses)
(microsecond photoresponse in **liq. cryst.**
photoconductor doped with carbon cluster under illumination of visible
light)
- IT **195375-07-6**, 2-(4'-Octylphenyl)-6-dodecyloxy-naphthalene
RL: PRP (Properties); TEM (Technical or engineered material use); USES
(Uses)
(microsecond photoresponse in **liq. cryst.**
photoconductor doped with carbon cluster under illumination of visible
light)

RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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(2) Adam, D; Phys Rev Lett 1993, V70, P457 HCAPLUS
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HCAPLUS
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- IT **195375-07-6**, 2-(4'-Octylphenyl)-6-dodecyloxy-naphthalene
RL: PRP (Properties); TEM (Technical or engineered material use); USES
(Uses)
(microsecond photoresponse in **liq. cryst.**
photoconductor doped with carbon cluster under illumination of visible
light)

RN 195375-07-6 HCAPLUS

CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 31 OF 43 HCAPLUS COPYRIGHT 2003 ACS

AN 1999:260905 HCAPLUS

DN 130:318424

TI Optical recording media, optical recording apparatus, and optical
recording method

IN Saizawa, Hideyuki; Hirao, Akiko
 PA Toshiba Corp., Japan
 SO Jpn. Kokai Tokkyo Koho, 10 pp.
 CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM G11B011-08

ICS G02F001-35; G03C001-73; G03H001-02; G03H001-26; G11B007-24;
 G11C013-04

CC 73-12 (Optical, Electron, and Mass Spectroscopy and Other Related
 Properties)

Section cross-reference(s): 74, 75

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11110836	A2	19990423	JP 1997-266520	19970930
PRAI	JP 1997-266520		19970930		

AB The media contain mols. showing charge-generating property generated by electromagnetic wave radiation, a polymer compd. with charge-transporting property and liq. crystallinity, and mols. showing nonlinear optical property generated by electromagnetic wave radiation. The method involves irradiating electromagnetic wave to the media and heating at .gtoreq. liq. crystal transition temp. The app. is also claimed. The media show photorefractive effect. The media are useful for holog. recording by electromagnetic wave radiation.

ST optical recording medium electromagnetic wave radiation; holog recording liq crystal polymer; photorefractive effect optical recording material

IT Electromagnetic wave

Holographic recording materials

Liquid crystals

(optical recording media by electromagnetic wave radiation)

IT 482-89-3

RL: TEM (Technical or engineered material use); USES (Uses)

(charge generator; optical recording media by electromagnetic wave radiation)

IT **180287-01-8**

RL: TEM (Technical or engineered material use); USES (Uses)

(charge-transporting liq. crystal; optical recording media by electromagnetic wave radiation)

IT 29124-72-9

RL: TEM (Technical or engineered material use); USES (Uses)

(nonlinear optical component; optical recording media by electromagnetic wave radiation)

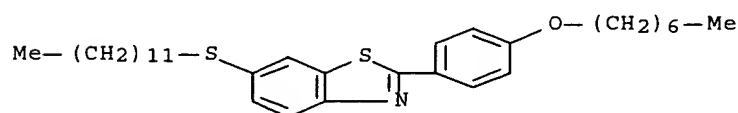
IT **180287-01-8**

RL: TEM (Technical or engineered material use); USES (Uses)

(charge-transporting liq. crystal; optical recording media by electromagnetic wave radiation)

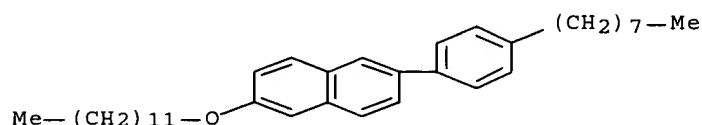
RN 180287-01-8 HCAPLUS

CN Benzothiazole, 6-(dodecylthio)-2-[4-(heptyloxy)phenyl]- (9CI) (CA INDEX NAME)



AN 1999:151419 HCAPLUS
 DN 130:216548
 TI Photoconductive anisotropy in smectic **liquid crystalline**
 photoconductor, 2-(4'-octylphenyl)-6-dodecyloxynaphthalene
 AU Funahashi, Masahiro; Hanna, Jun-Ichi
 CS Imaging Science and Engineering Laboratory, Tokyo Institute of Technology,
 Yokohama, 226-8503, Japan
 SO Japanese Journal of Applied Physics, Part 2: Letters (1999), 38(2A),
 L132-L135
 CODEN: JAPLD8; ISSN: 0021-4922
 PB Japanese Journal of Applied Physics
 DT Journal
 LA English
 CC 76-5 (Electric Phenomena)
 Section cross-reference(s): 74, 75
 AB Photoconductive anisotropy of a **liq. cryst.**
 photoconductor, 2-(4'-octylphenyl)-6-dodecyloxynaphthalene (8-PNP-012),
 exhibiting smectic B (SmB) and smectic A (SmA) phases was studied by
 steady-state and transient photocurrent measurements for homogeneous and
 homeotropic alignment cells. In the steady-state photocurrent measurement
 under UV light illumination, the photoconductive anisotropic ratio, i.e.,
 a photocurrent ratio for the homogeneous cell to the homeotropic one, was
 10 in the SmB phase and 5 in the SmA phase, in contrast to no difference
 in the isotropic phase. In the transient photocurrent measurements, very
 small photocurrents at a detection limit were obsd. in the homeotropic
 cells irresp. of the mesophases, while rapid nondispersive transient
 photocurrents were obtained in the homogeneous cells.
 ST smectic **liq crystal** dodecyloxynaphthalene photocond
 IT Photoconductivity
 (anisotropy; in smectic **liq. cryst.** photoconductor,
 2-(4'-octylphenyl)-6-dodecyloxynaphthalene)
 IT Photoconductors
 (**liq.-crystal**; photoconductive anisotropy in
 smectic **liq. cryst.** photoconductor,
 2-(4'-octylphenyl)-6-dodecyloxynaphthalene)
 IT **Liquid crystals**
 (photoconductive anisotropy in smectic **liq. cryst.**
 photoconductor, 2-(4'-octylphenyl)-6-dodecyloxynaphthalene)
 IT **195375-07-6**, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene
 RL: PRP (Properties)
 (photoconductive anisotropy in smectic **liq.-cryst.**
 photoconductor, 2-(4'-octylphenyl)-6-dodecyloxynaphthalene)
 RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD
 RE
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 IT **195375-07-6**, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene

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 (17) Tang, C; Appl Phys Lett 1987, V51, P12
 IT 195375-07-6
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (polarized light emission from a calamitic liq. cryst
 . semiconductor doped with dyes)
 RN 195375-07-6 HCAPLUS
 CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 37 OF 43 HCAPLUS COPYRIGHT 2003 ACS
 AN 1997:725889 HCAPLUS
 DN 128:41963
 TI First electronic conduction with high hole mobility in smectic A phase of a calamitic liquid crystal
 AU Funahashi, Masahiro; Hanna, Jun-ichi
 CS Lab. Imaging Science and Eng., Fac. Eng., Tokyo Inst. Technology, Yokohama, 226, Japan
 SO Molecular Crystals and Liquid Crystals Science and Technology, Section A: Molecular Crystals and Liquid Crystals (1997), 304, 429-434
 CODEN: MCLCE9; ISSN: 1058-725X
 PB Gordon & Breach
 DT Journal
 LA English
 CC 76-1 (Electric Phenomena)
 Section cross-reference(s): 75
 AB Liq. cryst. photoconductor 2-(4'-heptyloxyphenyl)-6-dodecylthiobenzothiazole was designed and its carrier transport characteristics was measured with Time-of-Flight (TOF) technique. In crystal state, only transient current decay originating from a capturing process of photo-generated carriers by deep traps fromed at grain boundaries was obsd. In smectic A (SmA) phase, nondispersive transient photocurrent based on fast hole transport was obsd., in which hole mobility wad 5 .times. 10-3 cm/Vs, independent of elec. field. In isotropic phase, ambipolar transport proceeded and the mobilities of both pos. charge and neg. charge carriers were .apprx.10-5 cm2/Vs.
 ST elec conduction hole mobility smectic mesophase
 IT Liquid crystals
 (calamitic; first electronic conduction with high hole mobility in smectic A phase of (heptyloxyphenyl)dodecylthiobenzothiazole calamitic liq. crystal)
 IT Hole mobility
 Photoconductivity
 (first electronic conduction with high hole mobility in smectic A phase

of (heptyloxyphenyl)dodecylthiobenzothiazole calamitic liq. crystal)

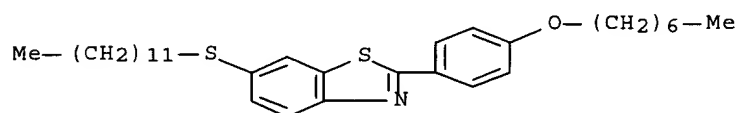
IT Photoconductors
(liq. cryst.; first electronic conduction with high hole mobility in smectic A phase of (heptyloxyphenyl)dodecylthiobenzothiazole calamitic liq. crystal)

IT 180287-01-8
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(first electronic conduction with high hole mobility in smectic A phase of (heptyloxyphenyl)dodecylthiobenzothiazole calamitic liq. crystal)

IT 180287-01-8
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(first electronic conduction with high hole mobility in smectic A phase of (heptyloxyphenyl)dodecylthiobenzothiazole calamitic liq. crystal)

RN 180287-01-8 HCAPLUS

CN Benzothiazole, 6-(dodecylthio)-2-[4-(heptyloxy)phenyl]- (9CI) (CA INDEX NAME)



L97 ANSWER 38 OF 43 HCAPLUS COPYRIGHT 2003 ACS

AN 1997:518572 HCAPLUS

DN 127:241392

TI Fast ambipolar carrier transport in smectic phases of phenylnaphthalene **liquid crystal**

AU Funahashi, Masahiro; Hanna, Jun-ichi

CS Imaging Sci. Eng. Lab., Tokyo Inst. Technol., Yokohama, 226, Japan

SO Applied Physics Letters (1997), 71(5), 602-604
CODEN: APPLAB; ISSN: 0003-6951

PB American Institute of Physics

DT Journal

LA English

CC 76-2 (Electric Phenomena)
Section cross-reference(s): 75

AB The carrier transport in a new calamitic **liq. crystal**, i.e., 2-(4'-octylphenyl)-6-dodecyloxynaphthalene (8-PNP-O12) was investigated by the time-of-flight technique. Fast ambipolar electronic conduction was obsd. in two smectic phases of 8-PNP-O12. The carrier mobilities were detd. to be 1.6 .times. 10⁻³ cm²/V-s in the lower temp. smectic phase (Sm1) between 79 and 100.degree. and to be 2.5 .times. 10⁻⁴ cm²/V-s in the higher temp. phase (Sm2) between 100 and 121.degree., regardless of carrier signs, i.e., electron and hole. Slower ambipolar transport was obsd. in the isotropic phase as well, whose mobility was 8 .times. 10⁻⁵ cm²/V-s. These mobilities were independent of applied elec. field and temp.

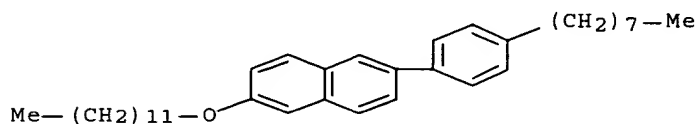
ST smectic phase phenylnaphthalene **liq crystal**

IT **Liquid crystals**
(smectic; fast ambipolar carrier transport in smectic phases of phenylnaphthalene **liq. crystal**)

IT Electric current carriers
(transport; fast ambipolar carrier transport in smectic phases of phenylnaphthalene **liq. crystal**)

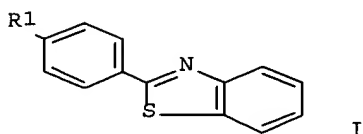
IT 195375-07-6, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene

RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (fast ambipolar carrier transport in smectic phases of
 phenylnaphthalene **liq. crystal**)
 IT **195375-07-6**, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (fast ambipolar carrier transport in smectic phases of
 phenylnaphthalene **liq. crystal**)
 RN 195375-07-6 HCAPLUS
 CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 39 OF 43 HCAPLUS COPYRIGHT 2003 ACS
 AN 1997:253982 HCAPLUS
 DN 126:245158
 TI Preparation of benzothiazole liquid crystals
 IN Hanna, Junichi; Funabashi, Masahiro; Akada, Masanori; Ando, Masayuki;
 Kosaka, Yozo
 PA Dai Nippon Printing Co., Ltd., Japan
 SO Eur. Pat. Appl., 90 pp.
 CODEN: EPXXDW
 DT Patent
 LA English
 IC ICM C07D277-66
 ICS C09K019-34; G02F001-13
 CC 75-11 (Crystallography and Liquid Crystals)
 Section cross-reference(s): 74
 FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 763532	A2	19970319	EP 1996-113638	19960826
	EP 763532	A3	20010502		
	R: DE, FR, GB				
	JP 09059266	A2	19970304	JP 1995-239037	19950825
	JP 09059267	A2	19970304	JP 1995-239038	19950825
	JP 09255670	A2	19970930	JP 1996-93045	19960325
	JP 09316442	A2	19971209	JP 1997-55450	19970225
PRAI	JP 1995-239037	A	19950825		
	JP 1995-239038	A	19950825		
	JP 1996-93044	A	19960325		
	JP 1996-93045	A	19960325		
OS	MARPAT 126:245158				
GI					



AB The title compds., e.g., I [R1, R2 = cyano, nitro, F, alkyl or alkoxy group (attached to the arom. ring through an oxygen atom or a sulfur atom), provided that at least one of R1 and R2 represents said alkyl or alkoxy group], are prepd. I are useful as liq. crystals (no data). I [R1 = cyano; R2 = S(CH₂)₇Me] was prepd. in an example. I also exhibit photocond. and fluorescence.

ST benzothiazole prepn liq crystal; photoconductor benzothiazole prepn; fluorescence benzothiazole prep

IT Liquid crystals
RL: SPN (Synthetic preparation); PREP (Preparation)
(benzothiazoles)

IT Photoconductors
RL: MSC (Miscellaneous)
(benzothiazoles for photoconductors)

IT Electroluminescent devices
RL: MSC (Miscellaneous)
(prepn. of benzothiazoles for electroluminescent devices)

IT 105-07-7, 4-Cyanobenzaldehyde 137-07-5, 2-Aminobenzenethiol 1142-39-8, 4-Hexyloxybenzoic acid 27893-41-0, 4-Heptyloxybenzaldehyde 56922-67-9, 4-Hexyloxybenzyl chloride 75464-52-7 188485-30-5 188485-31-6
RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. of benzothiazoles for electroluminescent devices)

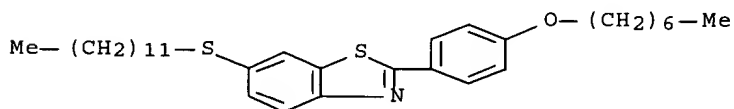
IT 188485-25-8P 188485-26-9P 188485-32-7P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. of benzothiazoles for electroluminescent devices)

IT **180287-01-8P** 188484-99-3P 188485-00-9P 188485-01-0P
188485-02-1P 188485-03-2P 188485-04-3P 188485-05-4P 188485-06-5P
188485-07-6P 188485-08-7P 188485-09-8P 188485-10-1P 188485-11-2P
188485-12-3P 188485-13-4P 188485-14-5P 188485-15-6P 188485-16-7P
188485-17-8P 188485-18-9P 188485-19-0P 188485-20-3P 188485-21-4P
188485-22-5P 188485-23-6P 188485-24-7P 188485-27-0P 188485-28-1P
188485-29-2P
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(prepn. of benzothiazoles for electroluminescent devices)

IT **180287-01-8P**
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(prepn. of benzothiazoles for electroluminescent devices)

RN 180287-01-8 HCAPLUS

CN Benzothiazole, 6-(dodecylthio)-2-[4-(heptyloxy)phenyl]- (9CI) (CA INDEX NAME)



L97 ANSWER 40 OF 43 HCAPLUS COPYRIGHT 2003 ACS

AN 1997:195929 HCAPLUS

DN 126:270938

TI Fast hole transport in a new calamitic liquid crystal of
2-(4'-heptyloxyphenyl)-6-dodecylthiobenzothiazole

AU Funahashi, Masahiro; Hanna, Jun-ichi

CS Imaging Sci. Eng. Lab., Tokyo Inst. Technology, Yokohama, 226, Japan

SO Physical Review Letters (1997), 78(11), 2184-2187

CODEN: PRLTAO; ISSN: 0031-9007

PB American Physical Society

DT Journal

LA English

CC 76-5 (Electric Phenomena)

Section cross-reference(s): 75

AB The carrier transport in different phases of a new photoconductive calamitic liq. crystal, 2-(4'-heptyloxyphenyl)-6-dodecylthiobenzothiazole was studied by the time-of-flight technique. In the smectic A phase, a fast hole transient photocurrent was obtained in a nondispersive manner, in which the mobility was $1.5 \times 10^{-3} \text{ cm}^2/\text{V s}$ and independent of applied elec. field; in the isotropic phase, however, slower carrier transport was obsd., probably due to pos. or neg. ions, and their mobilities were $10^{-5} \text{ cm}^2/\text{V s}$. These exptl. results demonstrate the importance of local mol. alignment in creating the fast electronic conduction in calamitic liq. crystals.

ST hole transport calamitic mesophase heptyloxyphenyl dodecylthiobenzothiazole

IT Hole (electron)

(fast hole transport in calamitic liq. crystal of)

IT Photoconductivity

(in (heptyloxyphenyl)dodecylthiobenzothiazole calamitic liq. crystals)

IT **180287-01-8**

RL: PEP (Physical, engineering or chemical process); PROC (Process)

(fast hole transport in calamitic liq. crystal of)

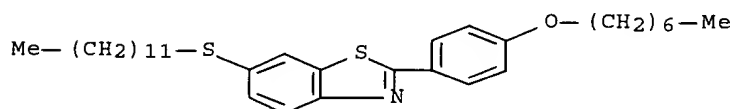
IT **180287-01-8**

RL: PEP (Physical, engineering or chemical process); PROC (Process)

(fast hole transport in calamitic liq. crystal of)

RN 180287-01-8 HCAPLUS

CN Benzothiazole, 6-(dodecylthio)-2-[4-(heptyloxy)phenyl]- (9CI) (CA INDEX NAME)



L97 ANSWER 41 OF 43 HCAPLUS COPYRIGHT 2003 ACS

AN 1997:50781 HCAPLUS

DN 126:138112

TI Realization of high-speed electron transmission by photoconductive smectic liquid crystals

AU Kato, Takashi

CS Grad. Sch. Eng., Univ. Tokyo, Tokyo, 113, Japan

SO Kagaku (Kyoto) (1997), 52(1), 66-67

CODEN: KAKYAU; ISSN: 0451-1964

PB Kagaku Dojin

DT Journal; General Review

LA Japanese

CC 76-0 (Electric Phenomena)

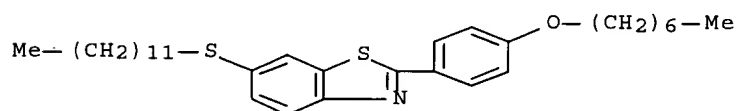
Section cross-reference(s): 75

AB A review with 4 refs. A phenylbenzothiazole deriv., showing high photocond. with $6 \times 10^{-3} \text{ cm}^2/\text{V-s}$ hole mobility in smectic A phase, is discussed.

ST review photoconductor smectic liq crystal phenylbenzothiazole; hole mobility benzothiazole photocond review

IT Hole mobility

Photoconductivity
 (of phenylbenzothiazole-based smectic liq. crystal)
 IT Photoconductors
 (photoconductive phenylbenzothiazole-based smectic liq. crystal)
 IT Liquid crystals
 (smectic A; photoconductive phenylbenzothiazole-based smectic liq.
 crystal)
 IT **180287-01-8**
 RL: PRP (Properties); TEM (Technical or engineered material use); USES
 (Uses)
 (photoconductive phenylbenzothiazole-based smectic liq. crystal)
 IT **180287-01-8**
 RL: PRP (Properties); TEM (Technical or engineered material use); USES
 (Uses)
 (photoconductive phenylbenzothiazole-based smectic liq. crystal)
 RN 180287-01-8 HCAPLUS
 CN Benzothiazole, 6-(dodecylthio)-2-[4-(heptyloxy)phenyl]- (9CI) (CA INDEX
 NAME)



L97 ANSWER 42 OF 43 HCAPLUS COPYRIGHT 2003 ACS
 AN 1996:387177 HCAPLUS
 DN 125:155648
 TI Photoconductive behavior in smectic A phase of 2-(4'-heptyloxyphenyl)-6-dodecylthiobenzothiazole
 AU Funahashi, Masahiro; Hanna, Jun-ichi
 CS Imaging Sci. Eng. Lab., Faculty Eng., Tokyo Inst. Technol., Yokohama, 226, Japan
 SO Japanese Journal of Applied Physics, Part 2: Letters (1996), 35(6A), L703-L705
 CODEN: JAPL D8; ISSN: 0021-4922
 PB Japanese Journal of Applied Physics
 DT Journal
 LA English
 CC 76-5 (Electric Phenomena)
 Section cross-reference(s): 75
 AB A new liq. cryst. photoconductor, 2-(4'-heptyloxyphenyl)-6-dodecylthiobenzothiazole exhibiting a smectic A (SmA) phase between 90.degree. and 100.degree. was synthesized and its photoconductive behavior was characterized by steady-state current-voltage measurements under UV illumination. A large photocurrent with a clear response to the illumination is obsd. in SmA and isotropic liq. phases in contrast to a very small photocurrent in the polycryst. phase. The exptl. results suggest electronic conduction in the SmA phase of calamitic liq. crystal.
 ST photocond smectic liq crystal; heptyloxyphenyl dodecylthiobenzothiazole liq crystal photocond
 IT Electric current-potential relationship
 Liquid crystals
 Photoconductivity and Photoconduction
 (photoconductive behavior in smectic A phase of 2-(4'-heptyloxyphenyl)-6-dodecylthiobenzothiazole)
 IT **180287-01-8**
 RL: PRP (Properties)

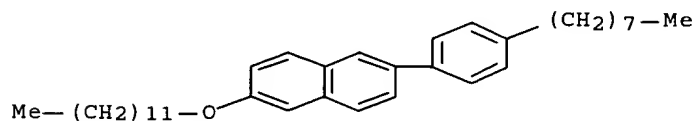
RL: PRP (Properties)

(photoconductive anisotropy in smectic **liq.-cryst.**

photoconductor, 2-(4'-octylphenyl)-6-dodecyloxynaphthalene)

RN 195375-07-6 HCAPLUS

CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 33 OF 43 HCAPLUS COPYRIGHT 2003 ACS

AN 1998:788284 HCAPLUS

DN 130:117816

TI Anomalous high carrier mobility in smectic E phase of a
2-phenylnaphthalene derivative

AU Funahashi, Masahiro; Hanna, Jun-ichi

CS Imaging Science and Engineering Laboratory, Tokyo Institute of Technology,
4259 Nagatsuta Midori-ku, Yokohama, 226-8503, Japan

SO Applied Physics Letters (1998), 73(25), 3733-3735

CODEN: APPLAB; ISSN: 0003-6951

PB American Institute of Physics

DT Journal

LA English

CC 76-1 (Electric Phenomena)

AB Ambipolar carrier transport properties in different phases of a
liq.-cryst. photoconductor, 2-(4-octylphenyl)-6-n-
butoxynaphthalene, were investigated by a time-of-flight technique.
Carrier mobilities were increased stepwise when phase transition took
place as the temp. decreased. The smectic E phase in the range of 55-125
.degree.C exhibited nondispersive ambipolar carrier transport with an
anomalous high carrier mobility of 1.0.times.10⁻² cm²/V s, while the
smectic A phase between 125 and 129 .degree.C had similar carrier
transport with a smaller mobility of 4.times.10⁻⁴ cm²/V s. In contrast to
the cryst. phase, structural defects in the smectic E phase, which were
obvious under microscopic observation with polarized illumination, did not
deteriorate the carrier transport properties.

ST carrier mobility smectic E octylphenyl butoxynaphthalene

IT Phase transition

Photoconductors

(anomalous high carrier mobility in smectic E phase of a
2-phenylnaphthalene deriv.)

IT Electric current carriers

(mobility; anomalous high carrier mobility in smectic E phase of a
2-phenylnaphthalene deriv.)

IT **Liquid crystals**

(smectic; anomalous high carrier mobility in smectic E phase of a
2-phenylnaphthalene deriv.)

IT **219683-04-2**, 2-(4-Octylphenyl)-6-n-butoxynaphthalene

RL: PRP (Properties)

(anomalous high carrier mobility in smectic E phase of a
2-phenylnaphthalene deriv.)

RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD

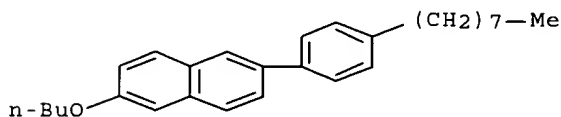
RE

(1) Adam, D; Nature (London) 1994, V371, P141 HCAPLUS

(2) Adam, D; Phys Rev Lett 1993, V70, P457 HCAPLUS

(3) Bassler, H; Phys Status Solidi B 1993, V11, P15

(4) Bosenberger, P; Organic Photoreceptors for Imaging System 1993
 (5) Funahashi, M; Appl Phys Lett 1997, V71, P602 HCAPLUS
 (6) Funahashi, M; Jpn J Appl Phys Part 2 1996, V35, PL703 HCAPLUS
 (7) Funahashi, M; Mol Cryst Liq Cryst Sci Technol Sect A 1997, V304, P429 HCAPLUS
 (8) Funahashi, M; Phys Rev Lett 1997, V78, P2184 HCAPLUS
 (9) Funahashi, M; to be published in Mol Cryst Liq Cryst
 (10) Gray, G; Smectic Liquid Crystals 1984
 (11) Keppler, R; Phys Rev 1960, V119, P1226
 (12) Miyaura, N; Synth Commun 1981, V11, P513 HCAPLUS
 (13) Silinsh, E; Organic Molecular Crystals 1980
 (14) Tangand, C; Appl Phys Lett 1987, V52, P12
 (15) Zhang, Z; unpublished
 IT 219683-04-2, 2-(4-Octylphenyl)-6-n-butoxynaphthalene
 RL: PRP (Properties)
 (anomalous high carrier mobility in smectic E phase of a
 2-phenylnaphthalene deriv.)
 RN 219683-04-2 HCAPLUS
 CN Naphthalene, 2-butoxy-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 34 OF 43 HCAPLUS COPYRIGHT 2003 ACS
 AN 1998:618711 HCAPLUS
 DN 129:252775
 TI **Liquid crystalline** charge transport material
 IN Junichi, Hanna; Kyoko, Kogo; Komei, Kafuku
 PA Dai Nippon Printing Co., Ltd., Japan
 SO Eur. Pat. Appl., 521 pp.
 CODEN: EPXXDW
 DT Patent
 LA English
 IC ICM C09K019-02
 ICS G02F001-13; C09K019-16; C09K019-18; C09K019-32; C09K019-34
 CC 75-11 (Crystallography and Liquid Crystals)
 Section cross-reference(s): 47, 73, 74, 76
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 864631	A2	19980916	EP 1998-104252	19980310
	EP 864631	A3	19991027		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	US 6224787	B1	20010501	US 1998-35937	19980306
	JP 10312711	A2	19981124	JP 1998-76820	19980309
PRAI	JP 1997-70870	A	19970310		

AB A novel **liq. cryst.** charge transport material is provided which simultaneously has the advantages of an amorphous material, i.e., evenness in a large area, and the advantages of a cryst. material having mol. alignment, has excellent high-quality charge transport capability, film-forming properties, various types of durability and the like, and permits the alignment to be regulated by external stimulation. The **liq. cryst.** charge transport material has smectic **liq. crystallinity** and an electron mobility of .gtoreq.1

x 10⁻⁵ cm²/V-s.

ST **liq cryst** charge transport material

IT **Liquid crystals**
 (liq. cryst. charge transport material for use in displays, electroluminescent devices, photoconductors, optical modulators, thin-film transistors, and optical and temp. sensors)

IT Electroluminescent devices
Liquid crystal displays
 Optical modulators
 Optical sensors
 Photoconductors
 Temperature sensors
 Thin film transistors
 (liq. cryst. charge transport materials for)

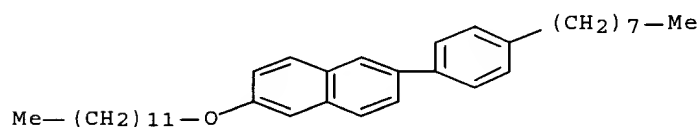
IT 188754-25-8 **195375-07-6**, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (liq. cryst. charge transport materials contg.)

IT 91-20-3D, Naphthalene, derivs., uses 95-16-9D, Benzothiazole, derivs.
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (liq. cryst. charge transport materials from)

IT **195375-07-6**, 2-(4'-Octylphenyl)-6-dodecyloxynaphthalene
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (liq. cryst. charge transport materials contg.)

RN 195375-07-6 HCAPLUS

CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 35 OF 43 HCAPLUS COPYRIGHT 2003 ACS

AN 1998:585846 HCAPLUS

DN 129:209401

TI **Liquid crystal** compound for display device

IN Hanna, Junichi; Funahashi, Masahiro; Kafuku, Komei; Kogo, Kyoko

PA Dai Nippon Printing Co., Ltd., Japan

SO Eur. Pat. Appl., 8 pp.
 CODEN: EPXXDW

DT Patent

LA English

IC ICM C07C043-20
 ICS C07C251-24; C07C321-24; C07C015-20; C07C069-63; C07C245-08;
 C09K019-32; G02F001-13

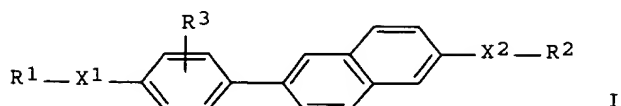
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 Section cross-reference(s): 25, 75

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 860417	A2	19980826	EP 1998-102929	19980219
	EP 860417	A3	19990728		

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,

IE, SI, LT, LV, FI, RO
 JP 10231260 A2 19980902 JP 1997-49593 19970219
 US 6174455 B1 20010116 US 1998-25249 19980218
 PRAI JP 1997-49593 A 19970219
 OS MARPAT 129:209401
 GI



AB The title **liq. crystal** compd. is represented by the general formula I (R1, R2 = a straight-chain, branched or cyclic, satd. or unsatd. hydrocarbon group having 1 to 22 carbon atoms and may be attached directly to the arom. ring without through X1 or X2; R3 = H, CN, NO2, F, or CH3; and X1, X2 = O, S, CO, OCO, CO2, N=CH, CONH, NH, NHCO, or CH2).

ST **liq crystal** phenyl-naphthalene deriv display device

IT **Liquid crystal** displays
 (liq. crystal comps. contg. phenyl-naphthalene derivs. for)

IT **Liquid crystals**
 (phenyl-naphthalene derivs. as)

IT 133997-05-4P 212079-31-7P, 2-Bromo-6-dodecyloxynaphthalene
 RL: RCT (Reactant); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (prepn. and reaction in prepg. phenyl-naphthalene deriv. **liq. crystals** for electrooptical display devices)

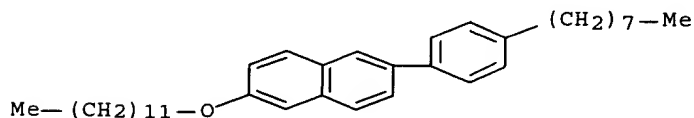
IT 121325-92-6P **195375-07-6P** 212079-33-9P 212079-34-0P
 212079-35-1P 212079-36-2P 212079-37-3P 212079-38-4P 212079-39-5P
 212079-40-8P 212079-41-9P 212079-42-0P 212124-70-4P 212124-71-5P
 212124-72-6P 212124-73-7P 212124-74-8P
 RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (prepn. and use in **liq.-crystal** display devices)

IT 121-43-7 143-15-7, 1-Bromododecane 15231-91-1, 2-Bromo-6-naphthol
 49763-66-8, p-Octylbenzaldehyde 51554-93-9, p-Octylbromobenzene
 212079-32-8, 2-Amino-6-dodecyloxynaphthalene
 RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
 (reaction in prepg. phenyl-naphthalene deriv. **liq. crystals** for electrooptical display devices)

IT **195375-07-6P**
 RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (prepn. and use in **liq.-crystal** display devices)

RN 195375-07-6 HCAPLUS

CN Naphthalene, 2-(dodecyloxy)-6-(4-octylphenyl)- (9CI) (CA INDEX NAME)



L97 ANSWER 36 OF 43 HCAPLUS COPYRIGHT 2003 ACS
 AN 1998:575210 HCAPLUS
 DN 129:267336
 TI Polarized light emission from a calamitic **liquid crystalline** semiconductor doped with dyes
 AU Kogo, Kyoko; Goda, Tadashi; Funahashi, Masahiro; Hanna, Jun-ichi
 CS Central Research Institute, Dai Nippon Printing Co., Ltd., Wakashiba, Kashiwa, 277-0871, Japan
 SO Applied Physics Letters (1998), 73(11), 1595-1597
 CODEN: APPLAB; ISSN: 0003-6951
 PB American Institute of Physics
 DT Journal
 LA English
 CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 22, 76
 AB **Liq. crystal** cells contg. a homogeneously aligned calamitic **liq. cryst.** semiconductor, 2-(4-octylphenyl)-6-dodecyloxynaphthalene, doped with dyes such as 3-(2-benzothiazolyl)7-diethylaminocoumarin, emitted a visible light when a d.c. bias was applied. This light emission occurred irresp. of phase, and polarized light emission was well established in the Smectic B phase. The unique features of the calamitic **liq. cryst.** semiconductors are also discussed from a practical viewpoint.
 ST polarized light emission calamitic **liq crystal**; semiconductor dye LED electroluminescence
 IT **Liquid crystals**
 (calamitic; polarized light emission from a calamitic **liq. cryst.** semiconductor doped with dyes)
 IT Electroluminescent devices
 (org.; polarized light emission from a calamitic **liq. cryst.** semiconductor doped with dyes)
 IT Luminescence, electroluminescence
 (polarized light emission from a calamitic **liq. cryst** . semiconductor doped with dyes)
 IT Polyimides, uses
 RL: DEV (Device component use); USES (Uses)
 (polarized light emission from a calamitic **liq. cryst** . semiconductor doped with dyes)
 IT **Liquid crystals**
 (smectic; polarized light emission from a calamitic **liq. cryst.** semiconductor doped with dyes)
 IT 50926-11-9, Indium tin oxide
 RL: DEV (Device component use); USES (Uses)
 (polarized light emission from a calamitic **liq. cryst** . semiconductor doped with dyes)
 IT 20571-42-0, 7-Diethylaminocoumarin **195375-07-6**
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (polarized light emission from a calamitic **liq. cryst** . semiconductor doped with dyes)
 RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD
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